RADIO TEST REPORT

Test Report No. 15655899S-A-R1

Customer	**JVCKENWOOD Corporation**
Description of EUT	**Monitor with receiver**
Model Number of EUT	**DMX1058XR**
FCC ID	**IOMJ5304**
Test Regulation	**FCC Part 15 Subpart C**
Test Result	**Complied**
Issue Date	**March 11, 2025**
Remarks	**Wireless LAN (2.4 GHz band) part(s)**

Representative Test Engineer	**Approved By**
S. Kobayashi	K. Noda
Shiro Kobayashi Engineer	Kazuya Noda Leader

CERTIFICATE 1266.03

☐ The testing in which "Non-accreditation" is displayed is outside the accreditation scopes in UL Japan, Inc.

☒ There is no testing item of "Non-accreditation".

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REVISION HISTORY

Original Test Report No. 15655899S-A

This report is a revised version of 15655899S-A. 15655899S-A is replaced with this report.

Revision	Test Report No.	Date	Page Revised Contents
- (Original)	15655899S-A	February 20, 2025	-
1	15655899S-A-R1	March 11, 2025	P.10 Added to the following text. *2) 11g configuration tests were conducted only at the band edge since preliminary testing indicated that the other spurious emission was lower than 11n-20.
			P.14 List of Cables Used <For Antenna Terminal Conducted test> No.1 to No.13 From: 0.1 m To: 0.15 m No.13 From: Unshielded To: Shielded
			P.24 Added to the following text. The test was performed with Gate function.

Reference: Abbreviations (Including words undescribed in this report)

A2LA	The American Association for Laboratory Accreditation	IEC	International Electrotechnical Commission
AC	Alternating Current	IEEE	Institute of Electrical and Electronics Engineers
AFH	Adaptive Frequency Hopping	IF	Intermediate Frequency
AM	Amplitude Modulation	ILAC	International Laboratory Accreditation Conference
Amp, AMP	Amplifier	ISED	Innovation, Science and Economic Development Canada
ANSI	American National Standards Institute	ISO	International Organization for Standardization
Ant, ANT	Antenna	JAB	Japan Accreditation Board
AP	Access Point	LAN	Local Area Network
ASK	Amplitude Shift Keying	LIMS	Laboratory Information Management System
Atten., ATT	Attenuator	MCS	Modulation and Coding Scheme
AV	Average	MRA	Mutual Recognition Arrangement
BPSK	Binary Phase-Shift Keying	N/A	Not Applicable
BR	Bluetooth Basic Rate	NIST	National Institute of Standards and Technology
BT	Bluetooth	NS	No signal detect.
BT LE	Bluetooth Low Energy	NSA	Normalized Site Attenuation
BW	BandWidth	NVLAP	National Voluntary Laboratory Accreditation Program
Cal Int	Calibration Interval	OBW	Occupied Band Width
CCK	Complementary Code Keying	OFDM	Orthogonal Frequency Division Multiplexing
Ch., CH	Channel	OFDMA	Orthogonal Frequency Division Multiple Access
CISPR	Comite International Special des Perturbations Radioelectriques	P/M	Power meter
CW	Continuous Wave	PCB	Printed Circuit Board
DBPSK	Differential BPSK	PER	Packet Error Rate
DC	Direct Current	PHY	Physical Layer
D-factor	Distance factor	PK	Peak
DFS	Dynamic Frequency Selection	PN	Pseudo random Noise
DQPSK	Differential QPSK	PP	Preamble Puncturing
DSSS	Direct Sequence Spread Spectrum	PRBS	Pseudo-Random Bit Sequence
EDR	Enhanced Data Rate	PSD	Power Spectral Density
EIRP, e.i.r.p.	Equivalent Isotropically Radiated Power	QAM	Quadrature Amplitude Modulation
EMC	ElectroMagnetic Compatibility	QP	Quasi-Peak
EMI	ElectroMagnetic Interference	QPSK	Quadri-Phase Shift Keying
EN	European Norm	RBW	Resolution Band Width
ERP, e.r.p.	Effective Radiated Power	RDS	Radio Data System
EU	European Union	RE	Radio Equipment
EUT	Equipment Under Test	RF	Radio Frequency
Fac.	Factor	RMS	Root Mean Square
FCC	Federal Communications Commission	RSS	Radio Standards Specifications
FHSS	Frequency Hopping Spread Spectrum	Rx	Receiving
FM	Frequency Modulation	SA, S/A	Spectrum Analyzer
Freq.	Frequency	SG	Signal Generator
FSK	Frequency Shift Keying	SVSWR	Site-Voltage Standing Wave Ratio
GFSK	Gaussian Frequency-Shift Keying	TR	Test Receiver
GNSS	Global Navigation Satellite System	Tx	Transmitting
GPS	Global Positioning System	VBW	Video BandWidth
Hori.	Horizontal	Vert.	Vertical
ICES	Interference-Causing Equipment Standard	WLAN	Wireless LAN

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SECTION 1: Customer Information

Company Name	JVCKENWOOD Corporation
Address	3-12, Moriya-cho, Kanagawa-ku, Yokohama, Kanagawa, 221-0022 Japan
Telephone Number	+81-45-450-2769
Contact Person	Seigo Tsutsumi

The information provided by the customer is as follows;
- Customer, Description of EUT, Model Number of EUT, FCC ID on the cover and other relevant pages
- Operating/Test Mode(s) (Mode(s)) on all the relevant pages
- SECTION 1: Customer Information
- SECTION 2: Equipment Under Test (EUT) other than the Receipt Date and Test Date
- SECTION 4: Operation of EUT during testing

SECTION 2: Equipment Under Test (EUT)

2.1 Identification of EUT

Description	Monitor with receiver
Model Number	DMX1058XR
Serial Number	Refer to SECTION 4.2
Condition	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification	No Modification by the test lab
Receipt Date	January 15, 2025
Test Date	January 16 to 30, 2025

2.2 Product Description

General Specification

Rating	DC 12 V
Operating temperature	-10 deg. C to +60 deg. C

Radio Specification

This report contains data provided by the customer which can impact the validity of results. UL Japan, Inc. is only responsible for the validity of results after the integration of the data provided by the customer.
The data provided by the customer is marked “a)” in the table below.

WLAN (IEEE802.11b/11g/11n-20)

Equipment Type	Transceiver
Frequency of Operation	2412 MHz to 2462 MHz
Type of Modulation	DSSS, OFDM
Antenna Gain[a)]	-7.4 dBi

Bluetooth (BR / EDR)

Equipment Type	Transceiver
Frequency of Operation	2402 MHz to 2480 MHz
Type of Modulation	FHSS
Antenna Gain[a)]	-16.1 dBi

WLAN (IEEE802.11a/11n-20/11ac-20/11n-40/11ac-40/11ac-80)

Equipment Type	Transceiver	
Frequency of Operation	20 MHz Band	5745 MHz to 5805 MHz
	40 MHz Band	5755 MHz to 5795 MHz
	80 MHz Band	5775 MHz
Type of Modulation	OFDM	
Antenna Gain[a)]	ANT0: -9.1 dBi	
	ANT1: -0.8 dBi	

2.3 Valiant models

Model Number	Brand	Difference
DMX1058XR	KENWOOD	Base
DMX1038S	KENWOOD	None Digital Audio output
KW-Z1001W	JVC	Key Volume, None Digital Audio output

SECTION 3: Test Specification, Procedures & Results

3.1 Test Specification

Test Specification	FCC Part 15 Subpart C The latest version on the first day of the testing period
Title	FCC 47 CFR Part 15 Radio Frequency Device Subpart C Intentional Radiators Section 15.207 Conducted limits Section 15.247 Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz

*The customer has declared that the EUT has complies with FCC Part 15 Subpart B as SDoC.

3.2 Procedures and Results

Item	Test Procedure	Specification	Worst Margin	Results	Remarks
Conducted Emission	**FCC:** ANSI C63.10-2013 6. Standard test methods	**FCC:** Section 15.207	-	N/A	*1)
	ISED: RSS-Gen 8.8	**ISED:** RSS-Gen 8.8			
6dB Bandwidth	**FCC:** KDB 558074 D01 15.247 Meas Guidance v05r02	**FCC:** Section 15.247(a)(2)	See data.	Complied	Conducted
	ISED: -	**ISED:** RSS-247 5.2(a)			
Maximum Peak Output Power	**FCC:** KDB 558074 D01 15.247 Meas Guidance v05r02	**FCC:** Section 15.247(b)(3)		Complied	Conducted
	ISED: RSS-Gen 6.12	**ISED:** RSS-247 5.4(d)			
Power Density	**FCC:** KDB 558074 D01 15.247 Meas Guidance v05r02	**FCC:** Section 15.247(e)		Complied	Conducted
	ISED: -	**ISED:** RSS-247 5.2(b)			
Spurious Emission Restricted Band Edges	**FCC:** KDB 558074 D01 15.247 Meas Guidance v05r02	**FCC:** Section15.247(d)	6.7 dB 442.368 MHz, QP, Horizontal Mode: Tx 11n-20 2437 MHz	Complied	Conducted (below 30 MHz)/ Radiated (above 30 MHz) *2)
	ISED: RSS-Gen 6.13	**ISED:** RSS-247 5.5 RSS-Gen 8.9 RSS-Gen 8.10			

Note: UL Japan, Inc.'s EMI Work Procedures: Work Instructions-ULID-003591 and Work Instructions-ULID-003593.
* In case any questions arise about test procedure, ANSI C63.10: 2013 is also referred.

*1) The test is not applicable since the EUT does not have AC Mains.
*2) Radiated test was selected over 30 MHz based on section 15.247(d) and KDB 558074 D01 15.247 Meas Guidance v05r02 8.5 and 8.6.

FCC Part 15.31 (e)

This EUT provides the stable voltage constantly to RF Module regardless of input voltage.
Instead of a new battery, DC power supply was used for the test. That does not affect the test result, therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT. Therefore, the equipment complies with the antenna requirement of Section 15.203.

3.3 Addition to Standard

Item	Test Procedure	Specification	Worst Margin	Results	Remarks
99% Occupied Bandwidth	**ISED:** RSS-Gen 6.7	**ISED:** -	N/A	-	Conducted

Other than above, no addition, exclusion nor deviation has been made from the standard.

3.4 Uncertainty

Measurement uncertainty is not taken into account when stating conformity with a specified requirement.
Note: When margins obtained from test results are less than the measurement uncertainty, the test results may exceed the limit.

The following uncertainties have been calculated to provide a confidence level of 95 % using a coverage factor *k* = 2.

Item	Frequency range	Uncertainty (+/-)
Conducted Emission (AC Mains) LISN	150 kHz to 30 MHz	3.0 dB
Radiated Emission (Measurement distance: 3 m)	9 kHz to 30 MHz	3.3 dB
	30 MHz to 200 MHz	4.8 dB
	200 MHz to 1 GHz	6.1 dB
	1 GHz to 6 GHz	4.7 dB
	6 GHz to 18 GHz	5.3 dB
	18 GHz to 40 GHz	5.5 dB
Radiated Emission (Measurement distance: 1 m)	1 GHz to 18 GHz	5.6 dB
	18 GHz to 40 GHz	5.8 dB

Antenna terminal test	Uncertainty (+/-)
Power Measurement above 1 GHz (Average Detector)	1.3 dB
Power Measurement above 1 GHz (Peak Detector)	1.5 dB
Spurious Emission (Conducted) below 1 GHz	0.93 dB
Conducted Emissions Power Density Measurement 1 GHz to 3 GHz	0.93 dB
Conducted Emissions Power Density Measurement 3 GHz to 18 GHz	3.0 dB
Spurious Emission (Conducted) 18 GHz to 26.5 GHz	2.8 dB
Spurious Emission (Conducted) 26.5 GHz to 40 GHz	2.3 dB
Bandwidth Measurement	0.012 %
Duty Cycle and Time Measurement	0.27 %
Temperature	2.2 deg.C.
Humidity	3.4 %
Voltage	0.92 %

3.5 Test Location

UL Japan, Inc. Shonan EMC Lab.
1-22-3, Megumigaoka, Hiratsuka-shi, Kanagawa-ken 259-1220 Japan
Telephone: +81-463-50-6400
A2LA Certificate Number: 1266.03
(FCC test firm registration number: 626366, ISED lab company number: 2973D / CAB identifier: JP0001)

Test room	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
No.1 Semi-anechoic chamber (SAC1)	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.2 Semi-anechoic chamber (SAC2)	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.3 Semi-anechoic chamber (SAC3)	12.7 x 7.7 x 5.35	12.7 x 7.7	5 m
No.4 Semi-anechoic chamber (SAC4)	8.1 x 5.1 x 3.55	8.1 x 5.1	-
Wireless anechoic chamber 1 (WAC1)	9.5 x 6.0 x 5.4	9.5 x 6.0	3 m
Wireless anechoic chamber 2 (WAC2)	9.5 x 6.0 x 5.4	9.5 x 6.0	3 m
No.1 Shielded room	6.8 x 4.1 x 2.7	6.8 x 4.1	-
No.2 Shielded room	6.8 x 4.1 x 2.7	6.8 x 4.1	-
No.3 Shielded room	6.3 x 4.7 x 2.7	6.3 x 4.7	-
No.4 Shielded room	4.4 x 4.7 x 2.7	4.4 x 4.7	-
No.5 Shielded room	7.8 x 6.4 x 2.7	7.8 x 6.4	-
No.6 Shielded room	7.8 x 6.4 x 2.7	7.8 x 6.4	-
No.8 Shielded room	3.45 x 5.5 x 2.4	3.45 x 5.5	-
No.1 Measurement room	2.55 x 4.1 x 2.5	-	-
No.2 Measurement room	4.5 x 3.5 x 2.5	-	-
Wireless shielded room 1	3.0 x 4.5 x 2.7	3.0 x 4.5	-
Wireless shielded room 2	3.0 x 4.5 x 2.7	3.0 x 4.5	-

3.6 Test Data, Test Instruments, and Test Set Up

Refer to APPENDIX.

SECTION 4: Operation of EUT during testing

4.1 Operating Mode(s)

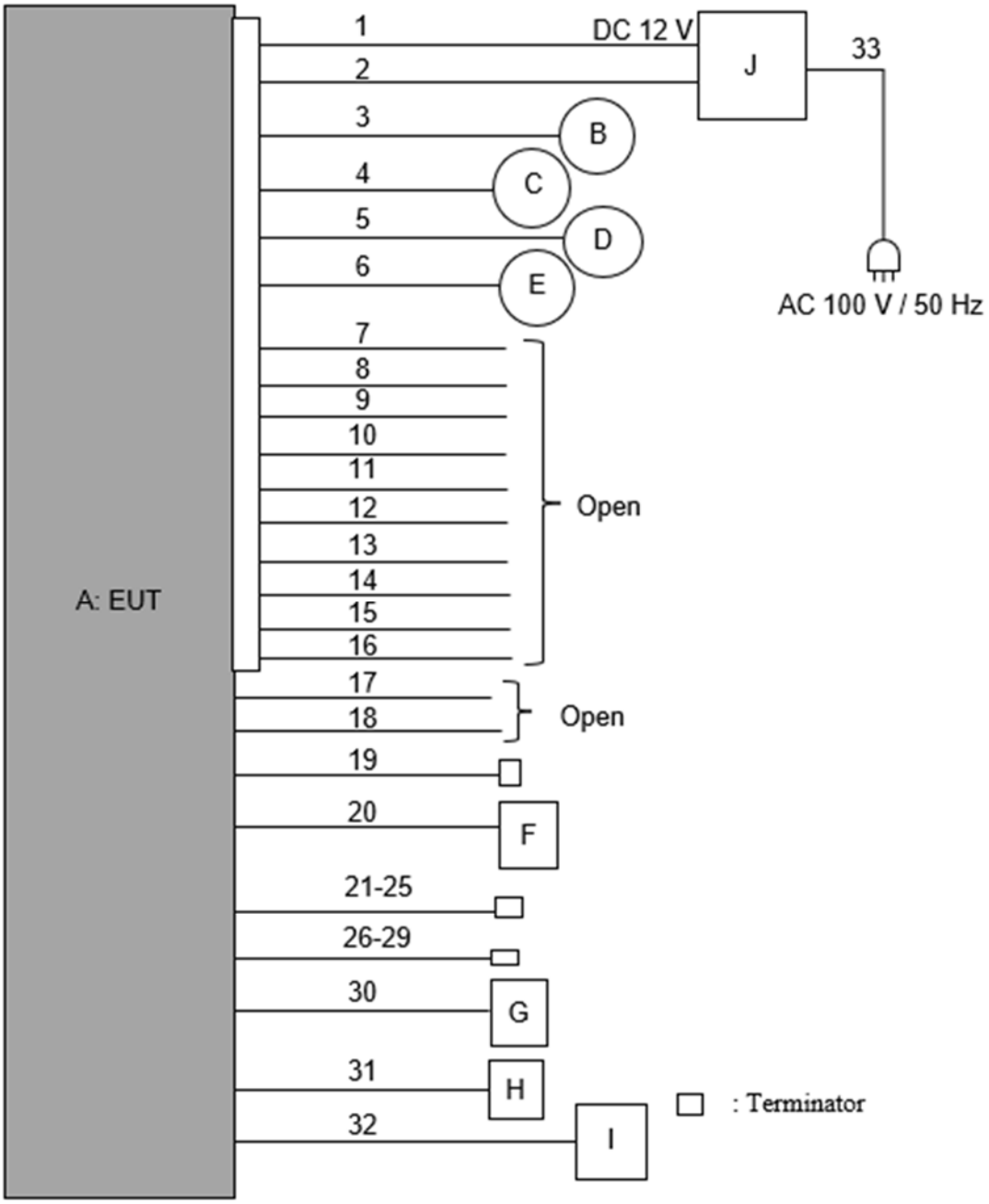
Mode	Remarks*
IEEE 802.11b (11b)	1 Mbps, PN9
IEEE 802.11g (11g)	54 Mbps, PN9
IEEE 802.11n 20 MHz BW (11n-20)	MCS 6, PN9
*The worst condition was determined based on the test result of Maximum Peak Output Power (Mid Channel)	
*Power of the EUT was set by the software as follows; Power Setting: Fixed Software: SoC : Version 0.0.1306.3200 System : Version 0.0.0059.4000 Panel : Version 0.0.0079.4000 (Date: 2025.01.16, Storage location: EUT memory) *This setting of software is the worst case. Any conditions under the normal use do not exceed the condition of setting. In addition, end users cannot change the settings of the output power of the product. Test operating mode was determined as follows according to “Section 1 of 6 802.11 a/b/g/n testing - Managing Complex Regulatory Approvals - ” of TCB Council Workshop October 2009.	

*The Details of Operating Mode(s)

Test Item	Operating Mode	Tested Frequency
Radiated Spurious Emission (Below 1 GHz), Conducted Spurious Emission	Tx 11n-20 *1)	2437 MHz
Radiated Spurious Emission (Above 1 GHz), 6 dB Bandwidth, Maximum Peak Output Power, Power Density, 99 % Occupied Bandwidth	Tx 11b Tx 11g *2) Tx 11n-20	2412 MHz 2437 MHz 2462 MHz
*1) The mode was tested as a representative, because it had the highest power at antenna terminal test. *2) 11g configuration tests were conducted only at the band edge since preliminary testing indicated that the other spurious emission was lower than 11n-20.		

4.2 Configuration and Peripherals

<For Radiated Emission test>



* Cabling and setup(s) were taken into consideration and test data was taken under worse case conditions.

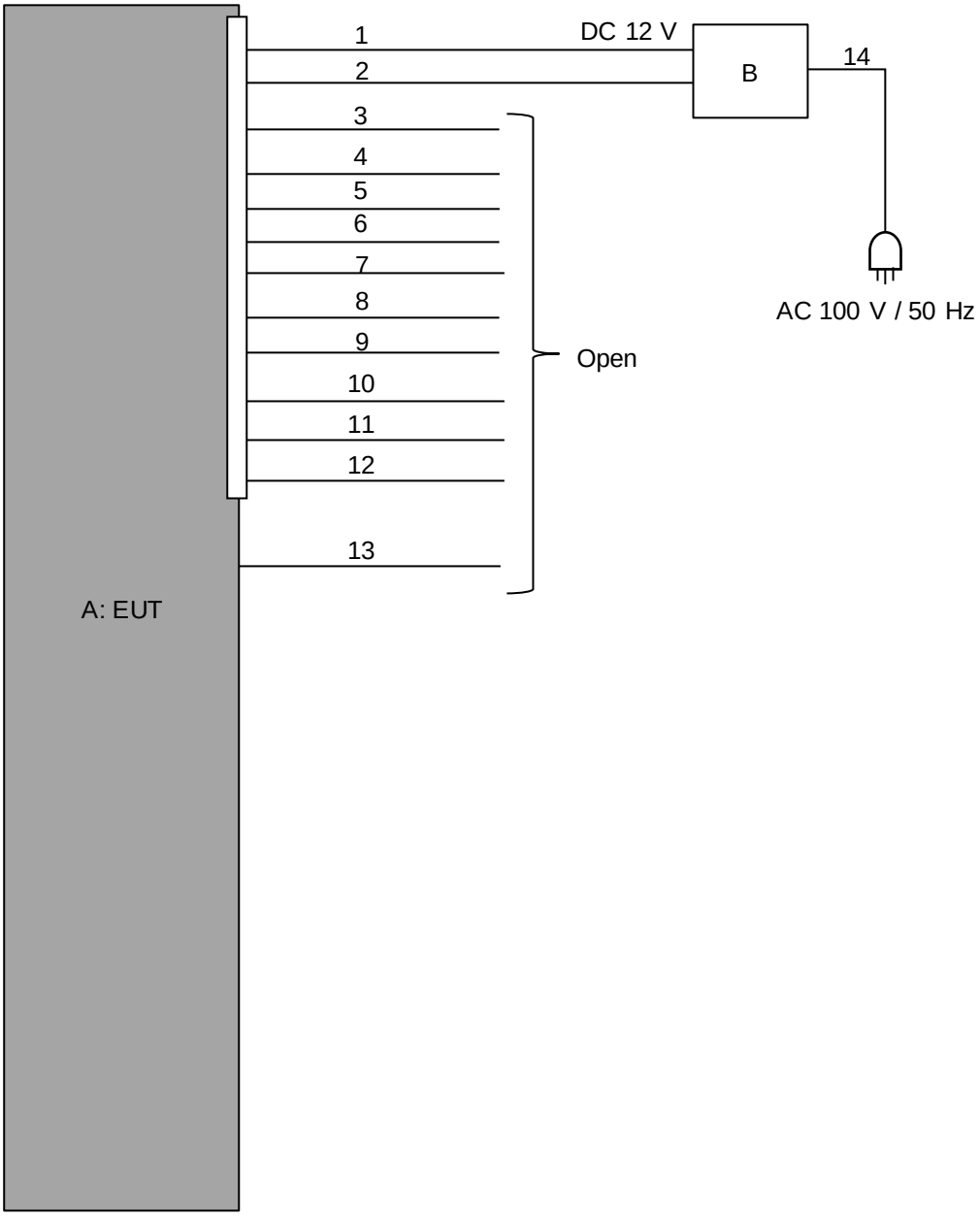
Description of EUT and Support Equipment

No.	Item	Model number	Serial number	Manufacturer	Remark
A	Monitor with Receiver	DMX1058XR	PK-X0014	JVCKENWOOD	EUT
B	Speaker(car)	LV-002	S11014200775	L&V	-
C	Speaker(car)	LV-002	S11014200775	L&V	-
D	Speaker(car)	LV-002	S11014200773	L&V	-
E	Speaker(car)	LV-002	S11014200773	L&V	-
F	Microphone	GD-VHM421C	-	JVCKENWOOD	-
G	GPS ANTENNA	GPA-GS211	-	JVCKENWOOD	-
H	USB Memory	SDCZ810 383	BN22120037344	SanDisk	-
I	iPhone	MQ792J/A	C8PY95XLJC6H	APPLE INC.	-
J	Power Supply (DC)	PAN35-10A	CY003459	Kikusui Electronics Corp.	-

List of Cables Used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC (ACC, B+)	0.2 + 1.4	Unshielded	Unshielded	-
2	DC (GND)	0.2 + 1.4	Unshielded	Unshielded	-
3	Speaker (Front-L) +/-	0.15 + 1.6 + 2.8	Unshielded	Unshielded	-
4	Speaker (Front-R) +/-	0.15 + 1.6 + 2.8	Unshielded	Unshielded	-
5	Speaker (Rear-L) +/-	0.15 + 1.6 + 2.8	Unshielded	Unshielded	-
6	Speaker (Rear-R) +/-	0.15 + 1.6 + 2.8	Unshielded	Unshielded	-
7	ILLUMI	0.15 + 0.9	Unshielded	Unshielded	-
8	ANT Cont	0.15 + 0.9	Unshielded	Unshielded	-
9	P.CONT	0.15 + 0.9	Unshielded	Unshielded	-
10	REMOTE Cont	0.15 + 0.9	Unshielded	Unshielded	-
11	PRK SW	2.0	Unshielded	Unshielded	-
12	REVERSE	2.0	Unshielded	Unshielded	-
13	CAM+	0.15 + 0.9	Unshielded	Unshielded	-
14	CAM-	0.15 + 0.9	Unshielded	Unshielded	-
15	MUTE	0.15 + 0.9	Unshielded	Unshielded	-
16	S.SENS	2.0	Unshielded	Unshielded	-
17	SXM IF	1.0	Shielded	Shielded	-
18	IF	1.0	Unshielded	Unshielded	-
19	FM/AM	0.15 + 1.8	Shielded	Shielded	-
20	Mic	3.0	Unshielded	Unshielded	-
21	Front View Camera	0.15 + 2.1	Shielded	Shielded	-
22	Rear View Camera	0.15 + 1.5	Shielded	Shielded	-
23	3rd View Camera	0.15 + 3.6	Shielded	Shielded	-
24	VIDEO IN	0.15 + 3.6	Shielded	Shielded	-
25	VIDEO OUT	0.2 + 3.6	Shielded	Shielded	-
26	AUDIO IN	0.2 + 3.5	Shielded	Shielded	-
27	AUDIO OUT Front	0.3 + 3.6	Shielded	Shielded	-
28	AUDIO OUT Rear	0.3 + 1.5	Shielded	Shielded	-
29	AUDIO OUT Subwoofer	0.3 + 1.5	Shielded	Shielded	-
30	GPS	3.4	Shielded	Shielded	-
31	USB	1.0	Shielded	Shielded	-
32	HDMI	1.7	Shielded	Shielded	-
33	AC	2.0	Unshielded	Unshielded	-

<For Antenna Terminal Conducted test>



Description of EUT and Support Equipment

No.	Item	Model number	Serial number	Manufacturer	Remark
A	Monitor with Receiver	DMX1058XR	PK-X0024	JVCKENWOOD	EUT
B	Power Supply (DC)	PNA16-10A	ER001077	Kikusui Electronics Corp.	-

List of Cables Used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC (ACC, B+)	0.15+0.5	Unshielded	Unshielded	-
2	DC (GND)	0.15+0.5	Unshielded	Unshielded	-
3	Speaker (Front-L) +/-	0.15	Unshielded	Unshielded	-
4	Speaker (Front-R) +/-	0.15	Unshielded	Unshielded	-
5	Speaker (Rear-L) +/-	0.15	Unshielded	Unshielded	-
6	Speaker (Rear-R) +/-	0.15	Unshielded	Unshielded	-
7	ILLUMI	0.15	Unshielded	Unshielded	-
8	ANT Cont	0.15	Unshielded	Unshielded	-
9	Mute	0.15	Unshielded	Unshielded	-
10	REMOTE Cont	0.15	Unshielded	Unshielded	-
11	Reverse	0.15	Unshielded	Unshielded	-
12	P.Cont	0.15	Unshielded	Unshielded	-
13	FM/AM	0.15	Shielded	Shielded	-
14	AC	2.0	Unshielded	Unshielded	-

SECTION 5: Radiated Spurious Emission

Test Procedure

It was measured based on "8.5 and 8.6 of KDB 558074 D01 15.247 Meas Guidance v05r02".

[For below 1 GHz]
EUT was placed on a urethane platform of nominal size, 1.0 m by 1.5 m, raised 0.8 m above the conducting ground plane. The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.

[For above 1 GHz]
EUT was placed on a urethane platform of nominal size, 0.5 m by 0.5 m, raised 1.5 m above the conducting ground plane. The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with absorbent materials lined on a ground plane. Test antenna was aimed at the EUT for receiving the maximum signal and always kept within the illumination area of the 3 dB beamwidth of the antenna.

The height of the measuring antenna varied between 1 m and 4 m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field strength.
The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer.
The measurements were made with the following detector function of the test receiver and the Spectrum analyzer (in linear mode).
The test was made with the detector (RBW/VBW) in the following table.
When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

Test Antennas are used as below;

Frequency	30 MHz to 200 MHz	200 MHz to 1 GHz	Above 1 GHz
Antenna Type	Biconical	Logperiodic	Horn

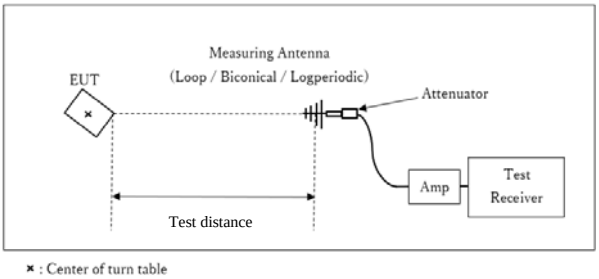
In any 100 kHz bandwidth outside the restricted band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator confirmed 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on a radiated measurement.

20 dBc was applied to the frequency over the limit of FCC 15.209 / Table 4 of RSS-Gen 8.9(ISED) and outside the restricted band of FCC15.205 / Table 6 of RSS-Gen 8.10 (ISED).

Frequency	Below 1 GHz	Above 1 GHz		20 dBc
Instrument Used	Test Receiver	Spectrum Analyzer		Spectrum Analyzer
Detector	QP	PK	AV	PK
IF Bandwidth	BW 120 kHz	RBW: 1 MHz VBW: 3 MHz	11.12.2.5.3 RBW: 1 MHz VBW: 1/T (T: burst length, refer to Burst rate confirmation sheet) Detector: Peak	RBW: 100 kHz VBW: 300 kHz

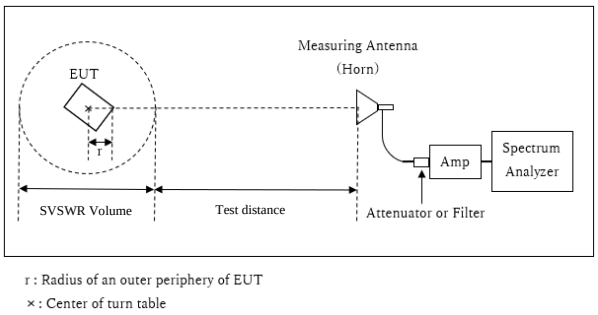
Figure 2: Test Setup

Below 1 GHz



Test Distance: 3 m

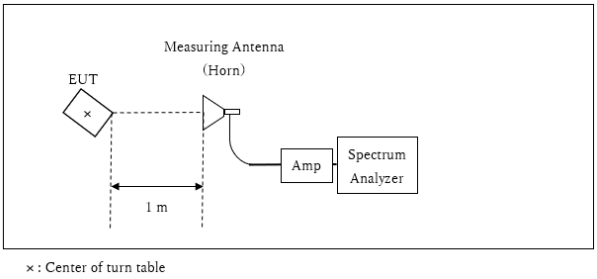
1 GHz to 10 GHz



Distance Factor: 20 x log (3.86 m* / 3.0 m) = 2.19 dB
*(Test Distance + SVSWR Volume /2) - r = 3.88 m

Test Distance: 3 m
SVSWR Volume: 2 m
(SVSWR Volume has been calibrated based on CISPR 16-1-4.)
r: 0.14 m

10 GHz to 26.5 GHz



Distance Factor: 20 x log (1.0 m / 3.0 m) = -9.54 dB
*Test Distance: 1 m

The carrier level and noise levels were confirmed at each position of 0 deg. and 40 deg. axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

Antenna polarization	Carrier	Spurious (30 MHz - 1 GHz)	Spurious (1 GHz - 2.8 GHz)	Spurious (2.8 GHz - 10 GHz)	Spurious (10 GHz - 18 GHz)	Spurious (18 GHz - 26.5 GHz)
Horizontal	0 deg.	0 deg.	0 deg.	0 deg.	0 deg.	0 deg.
Vertical	0 deg.	0 deg.	0 deg.	0 deg.	0 deg.	0 deg.

Test results are rounded off and limit are rounded down, so some differences might be observed.

Measurement Range : 30 MHz to 26.5 GHz
Test Data : APPENDIX
Test Result : Pass

SECTION 6: Antenna Terminal Conducted Tests

Test Procedure

The tests were made with below setting connected to the antenna port.

Test	Span	RBW	VBW	Sweep time	Detector	Trace	Instrument Used
6 dB Bandwidth	50 MHz	100 kHz	300 kHz	Auto	Peak	Max Hold	Spectrum Analyzer
99 % Occupied Bandwidth *1)	Enough width to display emission skirts	1 to 5 % of OBW	Three times of RBW	Auto	Peak	Max Hold	Spectrum Analyzer
Maximum Peak Output Power	-	-	-	Auto	Peak/ Average *2)	-	Power Meter (Sensor: 160 MHz BW)
Peak Power Density	1.5 times the 6 dB Bandwidth	3 kHz	9.1 kHz	Auto	Peak	Max Hold	Spectrum Analyzer *3)
Conducted Spurious Emission *4) *5)	9 kHz to 150 kHz	200 Hz	620 Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150 kHz to 30 MHz	10 kHz	30 kHz				

*1) Peak hold was applied as Worst-case measurement.
*2) Reference data
*3) Section 11.10.2 Method PKPSD (peak PSD) of "ANSI C63.10-2013".
*4) In the frequency range below 30MHz, RBW was narrowed to separate the noise contents.
Then, wide-band noise near the limit was checked separately, however the noise was not detected as shown in the chart.
(9 kHz - 150 kHz: RBW = 200 Hz, 150 kHz - 30 MHz: RBW = 10 kHz)
*5) The limits in CFR 47, Part 15, Subpart C, paragraph 15.209(a), are identical to those in RSS-Gen section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377 Ohmes. For example, the measurement at frequency 9 kHz resulted in a level of 45.5 dBuV/m, which is equivalent to 45.5 - 51.5 = -6.0 dBuA/m, which has the same margin, 3 dB, to the corresponding RSS-Gen Table 6 limit as it has to 15.209(a) limit.

Test results are rounded off and limit are rounded down, so some differences might be observed.
The equipment and cables were not used for factor 0 dB of the data sheets.

Test Data : APPENDIX
Test Result : Pass

APPENDIX 1: Test Data

99 % Occupied Bandwidth and 6 dB Bandwidth

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	January 20, 2025
Temperature / Humidity	22 deg. C / 31 % RH
Engineer	Shiro Kobayashi
Mode	Tx

11b

Frequency [MHz]	99 % Occupied Bandwidth [kHz]	6 dB Bandwidth [MHz]	Limit for 6 dB Bandwidth [MHz]
2412	13155.1	7.549	> 0.5000
2437	13043.1	7.140	> 0.5000
2462	13157.8	8.105	> 0.5000

11g

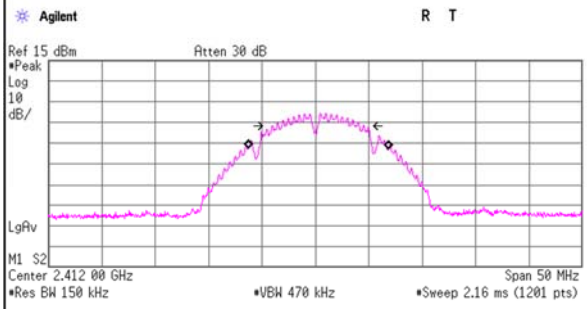
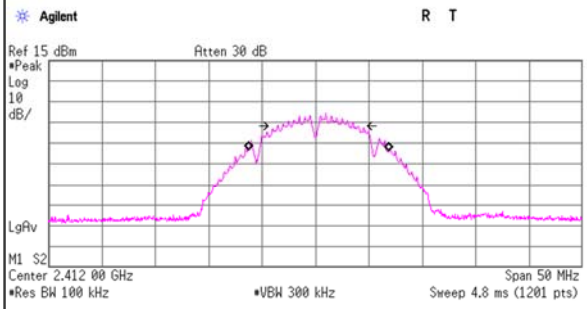
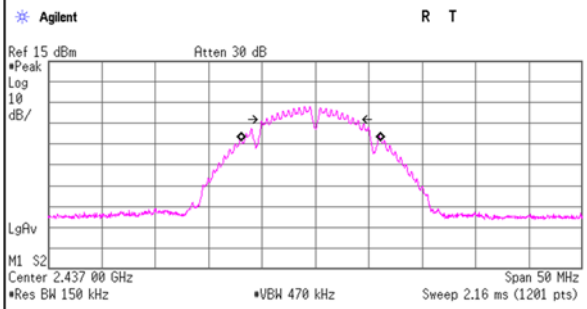
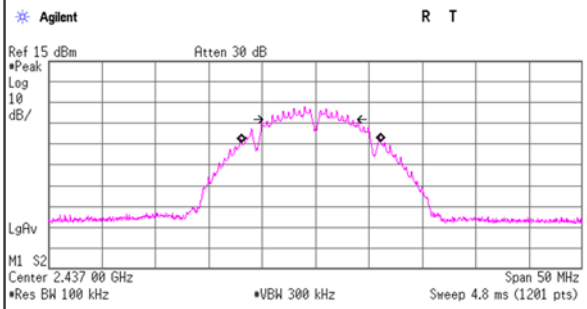
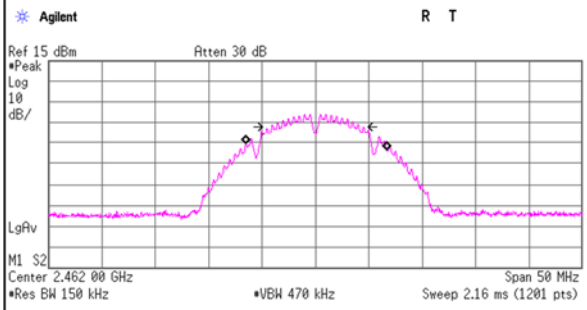
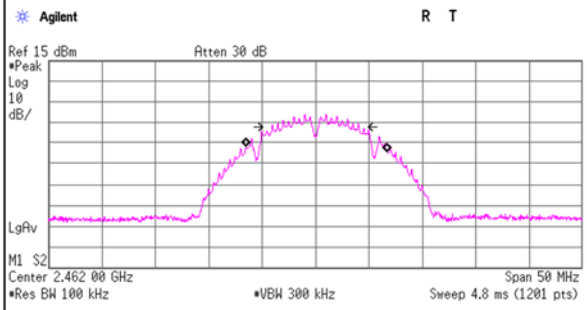
Frequency [MHz]	99 % Occupied Bandwidth [kHz]	6 dB Bandwidth [MHz]	Limit for 6 dB Bandwidth [MHz]
2412	16541.5	16.430	> 0.5000
2437	16541.0	15.840	> 0.5000
2462	16559.2	16.508	> 0.5000

11n-20

Frequency [MHz]	99 % Occupied Bandwidth [kHz]	6 dB Bandwidth [MHz]	Limit for 6 dB Bandwidth [MHz]
2412	17711.1	17.665	> 0.5000
2437	17657.7	16.429	> 0.5000
2462	17727.2	17.718	> 0.5000

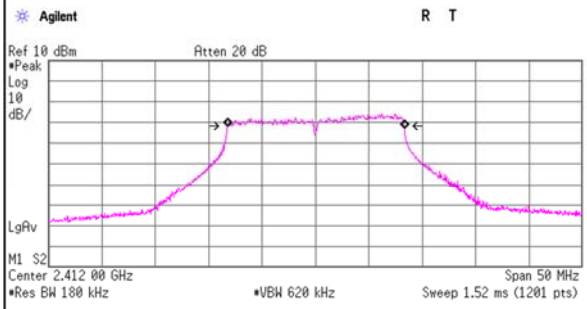
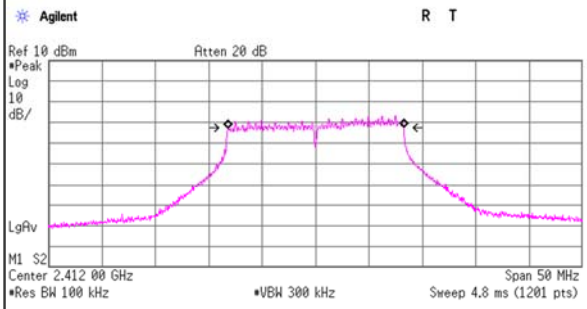
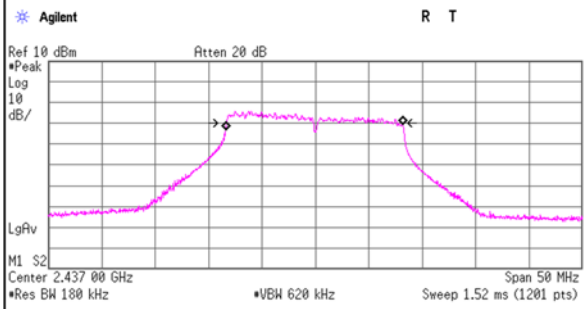
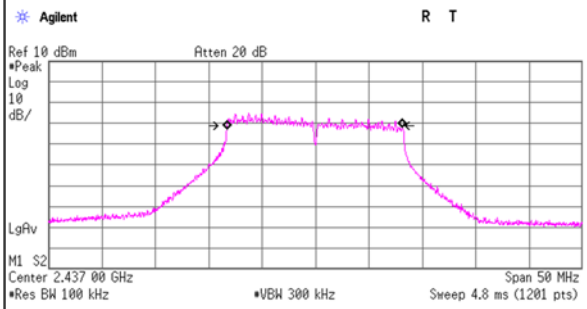
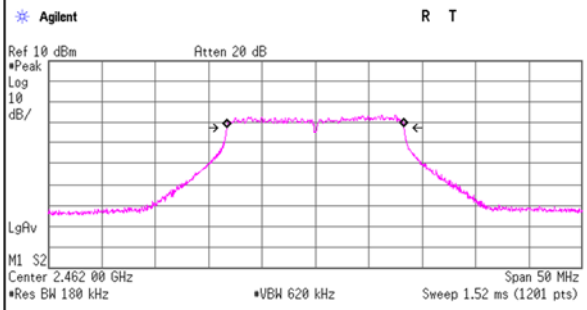
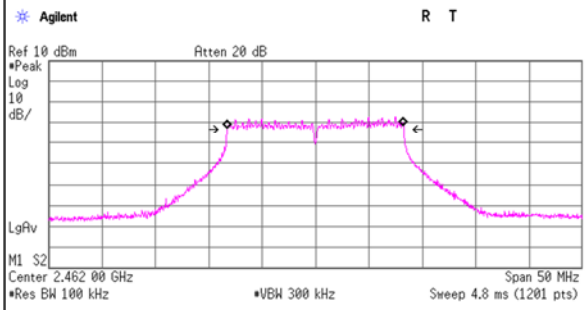
99 % Occupied Bandwidth and 6 dB Bandwidth

11b

99 % Occupied Bandwidth	6 dB Bandwidth
2412 MHz	**2412 MHz**
	
Occupied Bandwidth 13.1551 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 279.606 kHz x dB Bandwidth 8.567 MHz	Occupied Bandwidth 13.1132 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 262.602 kHz x dB Bandwidth 7.549 MHz
2437 MHz	**2437 MHz**
	
Occupied Bandwidth 13.0431 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error -384.744 kHz x dB Bandwidth 8.129 MHz	Occupied Bandwidth 13.0575 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error -401.474 kHz x dB Bandwidth 7.140 MHz
2462 MHz	**2462 MHz**
	
Occupied Bandwidth 13.1578 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 91.175 kHz x dB Bandwidth 8.140 MHz	Occupied Bandwidth 13.1888 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 109.743 kHz x dB Bandwidth 8.105 MHz

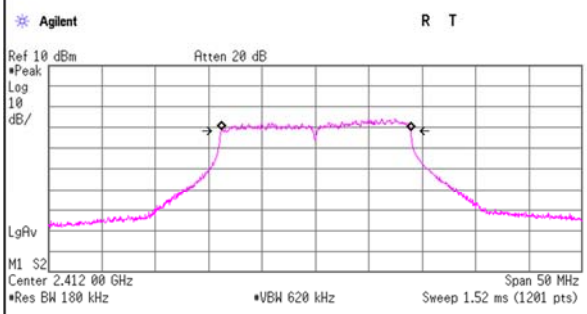
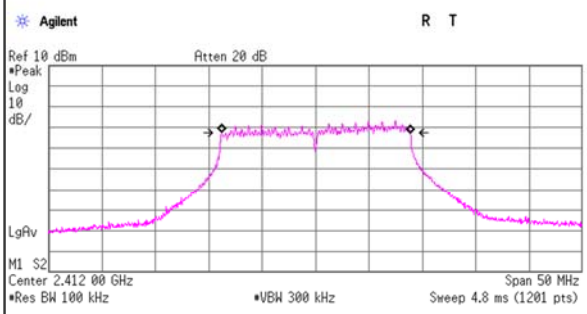
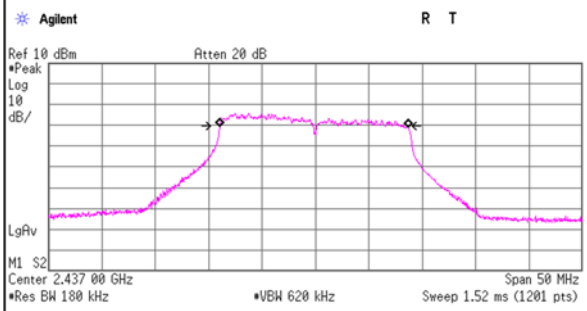
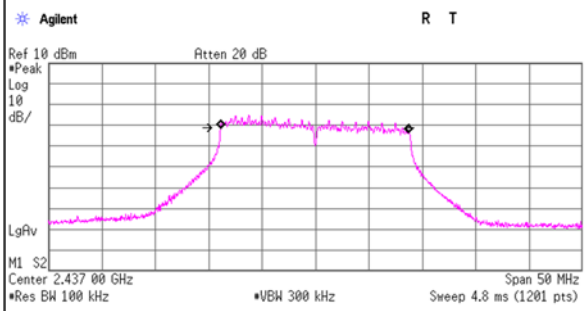
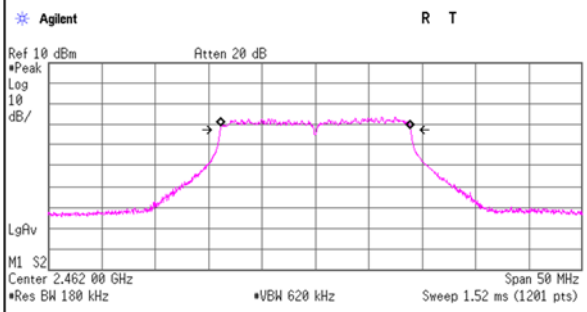
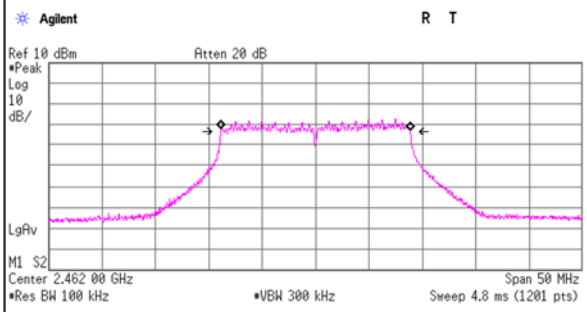
99 % Occupied Bandwidth and 6 dB Bandwidth

11g

99 % Occupied Bandwidth	6 dB Bandwidth
2412 MHz	**2412 MHz**
	
Occupied Bandwidth 16.5415 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 50.557 kHz x dB Bandwidth 16.508 MHz	Occupied Bandwidth 16.4504 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 21.792 kHz x dB Bandwidth 16.430 MHz
2437 MHz	**2437 MHz**
	
Occupied Bandwidth 16.5410 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error -117.848 kHz x dB Bandwidth 16.095 MHz	Occupied Bandwidth 16.4410 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error -80.995 kHz x dB Bandwidth 15.840 MHz
2462 MHz	**2462 MHz**
	
Occupied Bandwidth 16.5592 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 5.792 kHz x dB Bandwidth 16.577 MHz	Occupied Bandwidth 16.4642 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error -3.329 kHz x dB Bandwidth 16.508 MHz

99 % Occupied Bandwidth and 6 dB Bandwidth

11n-20

99 % Occupied Bandwidth	6 dB Bandwidth
2412 MHz	**2412 MHz**
	
Occupied Bandwidth 17.7111 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 49.572 kHz x dB Bandwidth 17.738 MHz	Occupied Bandwidth 17.6658 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 40.452 kHz x dB Bandwidth 17.665 MHz
2437 MHz	**2437 MHz**
	
Occupied Bandwidth 17.6577 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error -109.669 kHz x dB Bandwidth 17.092 MHz	Occupied Bandwidth 17.5922 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error -83.824 kHz x dB Bandwidth 16.429 MHz
2462 MHz	**2462 MHz**
	
Occupied Bandwidth 17.7272 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 16.902 kHz x dB Bandwidth 17.789 MHz	Occupied Bandwidth 17.6673 MHz Occ BW % Pwr 99.00 % x dB -6.00 dB Transmit Freq Error 10.650 kHz x dB Bandwidth 17.718 MHz

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room	
Date	January 16, 2025	January 21, 2025
Temperature / Humidity	21 deg. C / 25 % RH	20 deg. C / 51 % RH
Engineer	Miku Ikudome	Yosuke Murakami
Mode	Tx	

11b

Maximum peak output power 1 Mbps (worst)

				Conducted Power					e.i.r.p. for RSS-247					
Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin	Antenna Gain	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBi]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	-0.11	2.25	9.64	11.78	15.07	30.00	1000	18.22	-7.40	4.38	2.74	36.02	4000	31.64
2437	3.08	2.26	9.64	14.98	31.48	30.00	1000	15.02	-7.40	7.58	5.73	36.02	4000	28.44
2462	-0.51	2.27	9.64	11.40	13.80	30.00	1000	18.60	-7.40	4.00	2.51	36.02	4000	32.02

11g

Maximum peak output power 54 Mbps (worst)

				Conducted Power					e.i.r.p. for RSS-247					
Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin	Antenna Gain	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBi]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	3.88	2.25	9.64	15.77	37.76	30.00	1000	14.23	-7.40	8.37	6.87	36.02	4000	27.65
2437	5.04	2.26	9.64	16.94	49.43	30.00	1000	13.06	-7.40	9.54	8.99	36.02	4000	26.48
2462	4.18	2.27	9.64	16.09	40.64	30.00	1000	13.91	-7.40	8.69	7.40	36.02	4000	27.33

11n-20

Maximum peak output power MCS 6 (worst)

				Conducted Power					e.i.r.p. for RSS-247					
Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin	Antenna Gain	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBi]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	4.49	2.25	9.64	16.38	43.45	30.00	1000	13.62	-7.40	8.98	7.91	36.02	4000	27.04
2437	6.01	2.26	9.64	17.91	61.80	30.00	1000	12.09	-7.40	10.51	11.25	36.02	4000	25.51
2462	4.61	2.27	9.64	16.52	44.87	30.00	1000	13.48	-7.40	9.12	8.17	36.02	4000	26.90

Sample Calculation:

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

e.i.r.p. Result = Conducted Power Result + Antenna Gain

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room	
Date	January 16, 2025	January 21, 2025
Temperature / Humidity	21 deg. C / 25 % RH	20 deg. C / 51 % RH
Engineer	Miku Ikudome	Yosuke Murakami
Mode	Tx	

11b 2437 MHz

Rate [Mbps]	Reading [dBm]	Remark
1	3.08	*
2	2.57	
5.5	0.15	
11	-0.32	

*: Worst Rate

11g 2437 MHz

Rate [Mbps]	Reading [dBm]	Remark
6	1.47	
9	1.83	
12	1.55	
18	1.71	
24	4.94	
36	5.01	
48	4.97	
54	5.04	*

*: Worst Rate

11n-20 2437 MHz

MCS	Reading [dBm]	Remark
0	2.14	
1	1.85	
2	1.61	
3	4.39	
4	4.18	
5	4.70	
6	6.01	*
7	4.74	

*: Worst Rate

* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

* All comparisons were carried out on same frequency and measurement factors.

* This result value is not the final data and does not include cable attenuation or attenuation of attenuators.

Average Output Power
(Reference data for RF Exposure)

Test place	Shonan EMC Lab. No.5 Shielded Room	
Date	January 16, 2025	January 21, 2025
Temperature / Humidity	21 deg. C / 25 % RH	20 deg. C / 51 % RH
Engineer	Miku Ikudome	Yosuke Murakami
Mode	Tx	

11b

Average power 1 Mbps (Lowest)

Freq.	Reading	Cable Loss	Atten. Loss	Result (Time average)		Duty factor	Result (Burst power average)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
2412	-2.58	2.25	9.64	9.31	8.53	0.00	9.31	8.53
2437	0.53	2.26	9.64	12.43	17.50	0.00	12.43	17.50
2462	-3.02	2.27	9.64	8.89	7.74	0.00	8.89	7.74

11g

Average power 6Mbps (Lowest)

Freq.	Reading	Cable Loss	Atten. Loss	Result (Time average)		Duty factor	Result (Burst power average)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
2412	-6.11	2.25	9.64	5.78	3.78	0.00	5.78	3.78
2437	-4.85	2.26	9.64	7.05	5.07	0.00	7.05	5.07
2462	-6.09	2.27	9.64	5.82	3.82	0.00	5.82	3.82

11n-20

Average power MCS0 (Lowest)

Freq.	Reading	Cable Loss	Atten. Loss	Result (Time average)		Duty factor	Result (Burst power average)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
2412	-6.23	2.25	9.64	5.66	3.68	0.00	5.66	3.68
2437	-4.72	2.26	9.64	7.18	5.22	0.00	7.18	5.22
2462	-6.20	2.27	9.64	5.71	3.72	0.00	5.71	3.72

Sample Calculation:

Result (Time average) = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

Result (Burst power average) = Result (Time average) + Duty factor

The test was performed with Gate function.

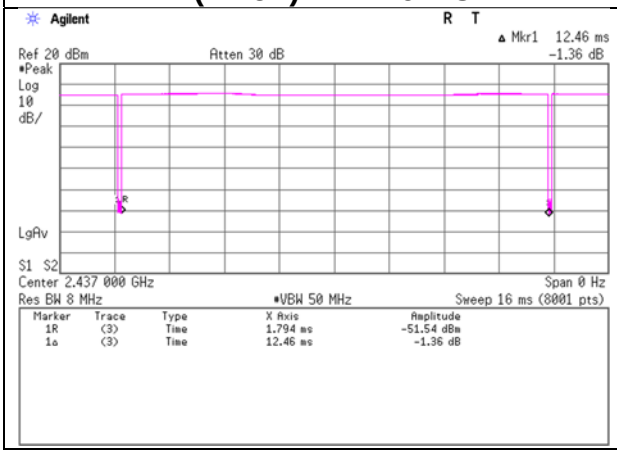
The average output power was measured with the lowest order modulation and lowest data rate configuration in each IEEE 802.11 mode based on KDB 248227 D01.

Burst rate confirmation

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	April 17, 2025
Temperature / Humidity	21 deg. C / 30 % RH
Engineer	Miku Ikudome
Mode	Tx

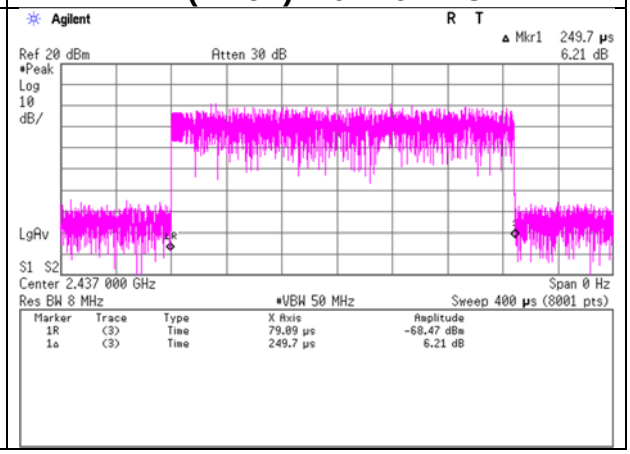
11b

VBW: 1/x = 81 Hz < 100 Hz
x: (Tx on) = 12.46 ms



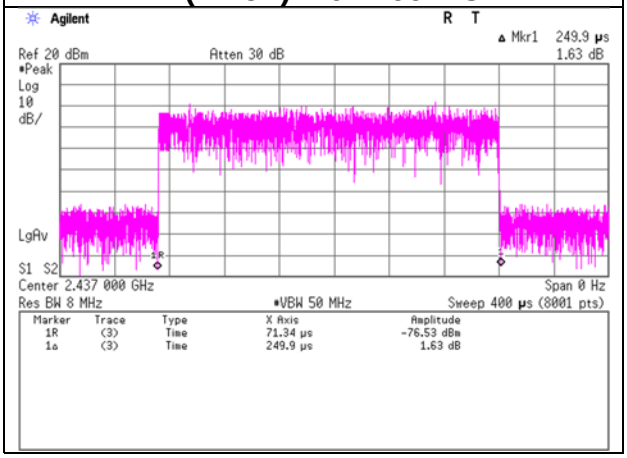
11g

VBW: 1/x = 4005 Hz < 5000 Hz
x: (Tx on) = 0.2497 ms



11n-20

VBW: 1/x = 4002 Hz < 5000 Hz
x: (Tx on) = 0.2499 ms



* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

Radiated Spurious Emission

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	WAC1	WAC1	WAC1
Date	January 21, 2025	January 25, 2025	January 26, 2025
Temperature / Humidity	21 deg. C / 41 % RH	20 deg. C / 33 % RH	22 deg. C / 33 % RH
Engineer	Miku Ikudome	Masahide Ozaki	Takayuki Kobayashi
	(1 GHz to 10 GHz)	(10 GHz to 18 GHz)	(18 GHz to 26.5 GHz)
Mode	Tx 11b 2412 MHz		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Fac. [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2390.000	PK	47.42	27.85	-28.00	-	2.19	49.46	73.9	24.4	182	192	-
Hori.	4824.000	PK	48.63	32.07	-35.34	-	2.19	47.55	73.9	26.3	141	158	-
Hori.	7236.000	PK	46.14	36.38	-33.97	-	2.19	50.74	73.9	23.1	150	0	Floor Noise
Hori.	9648.000	PK	45.89	37.93	-31.43	-	2.19	54.58	73.9	19.3	114	168	-
Hori.	2390.000	AV	32.80	27.85	-28.00	-	2.19	34.84	53.9	19.0	182	192	VBW : 100 Hz
Hori.	4824.000	AV	36.73	32.07	-35.34	-	2.19	35.65	53.9	18.2	141	158	VBW : 100 Hz
Hori.	7236.000	AV	32.05	36.38	-33.97	-	2.19	36.65	53.9	17.2	150	0	VBW : 100 Hz, floor noise
Hori.	9648.000	AV	32.08	37.93	-31.43	-	2.19	40.77	53.9	13.1	114	168	VBW : 100 Hz
Vert.	2390.000	PK	47.51	27.85	-28.00	-	2.19	49.55	73.9	24.3	138	166	-
Vert.	4824.000	PK	48.92	32.07	-35.34	-	2.19	47.84	73.9	26.0	399	217	-
Vert.	7236.000	PK	46.04	36.38	-33.97	-	2.19	50.64	73.9	23.2	150	0	Floor Noise
Vert.	9648.000	PK	46.75	37.93	-31.43	-	2.19	55.44	73.9	18.4	268	310	-
Vert.	2390.000	AV	32.76	27.85	-28.00	-	2.19	34.80	53.9	19.1	138	166	VBW : 100 Hz
Vert.	4824.000	AV	36.73	32.07	-35.34	-	2.19	35.65	53.9	18.2	399	217	VBW : 100 Hz
Vert.	7236.000	AV	32.02	36.38	-33.97	-	2.19	36.62	53.9	17.2	150	0	VBW : 100 Hz, floor noise
Vert.	9648.000	AV	32.57	37.93	-31.43	-	2.19	41.26	53.9	**12.6**	268	310	VBW : 100 Hz

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz) - Gain(Amp) (1 GHz to 18 GHz)) - Gain(Amp) (only below 1 GHz & above 18 GHz) + Distance Fac.
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
Distance Fac. : 1 GHz to 10 GHz : 20log (3.86 [m] / 3.0 [m]) = 2.19 [dB]
10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

20 dBc Data Sheet

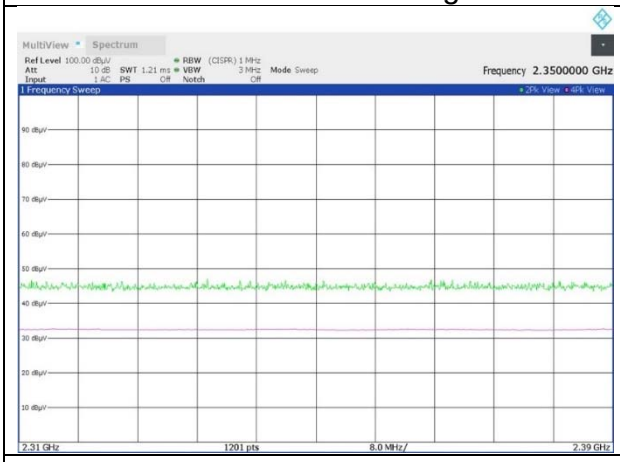
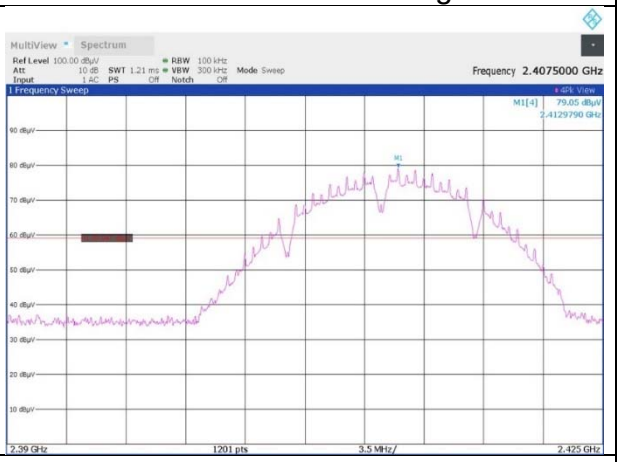
(RBW 100 kHz, VBW 300 kHz)

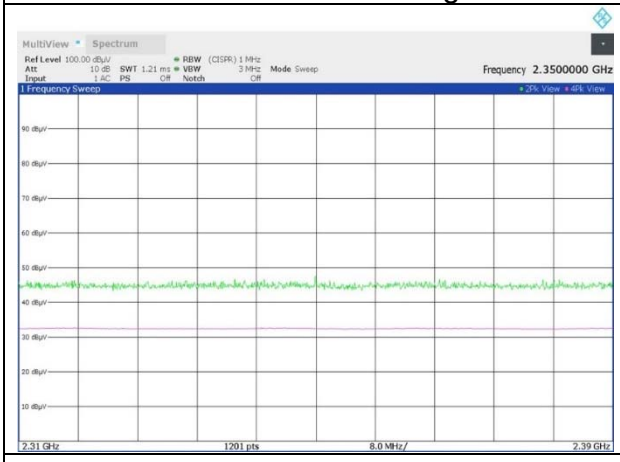
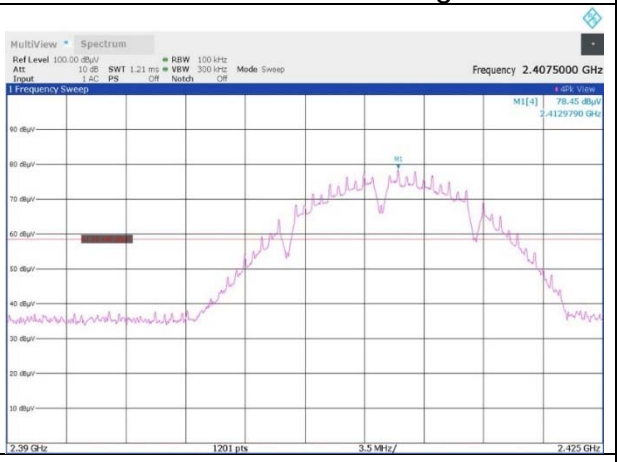
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Fac. [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	79.05	27.89	-27.99	-	2.19	81.14	-	-	Carrier
Hori.	2400.000	PK	38.70	27.89	-27.99	-	2.19	40.79	61.1	20.3	-
Vert.	2412.000	PK	78.45	27.89	-27.99	-	2.19	80.54	-	-	Carrier
Vert.	2400.000	PK	38.82	27.89	-27.99	-	2.19	40.91	60.5	19.5	-

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz) - Gain(Amp) (1 GHz to 18 GHz)) - Gain(Amp) (only below 1 GHz & above 18 GHz) + Distance Fac.
Distance Fac. : 1 GHz to 10 GHz : 20log (3.86 [m] / 3.0 [m]) = 2.19 [dB]
10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	WAC1
Date	January 21, 2025
Temperature / Humidity	21 deg. C / 41 % RH
Engineer	Miku Ikudome
Mode	Tx 11b 2412 MHz

Horizontal	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

Vertical	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge and authorized band edge were shown in tabular data.

Radiated Spurious Emission

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	WAC1	WAC1	WAC1
Date	January 21, 2025	January 25, 2025	January 26, 2025
Temperature / Humidity	21 deg. C / 41 % RH	20 deg. C / 33 % RH	22 deg. C / 33 % RH
Engineer	Miku Ikudome	Masahide Ozaki	Takayuki Kobayashi
	(1 GHz to 10 GHz)	(10 GHz to 18 GHz)	(18 GHz to 26.5 GHz)
Mode	Tx 11b 2437 MHz		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Fac. [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	4874.000	PK	49.52	32.30	-35.40	-	2.19	48.61	73.9	25.2	231	155	-
Hori.	7311.000	PK	46.33	36.61	-33.86	-	2.19	51.27	73.9	22.6	150	0	Floor Noise
Hori.	9748.000	PK	45.51	37.93	-31.34	-	2.19	54.29	73.9	19.6	131	170	-
Hori.	4874.000	AV	38.66	32.30	-35.40	-	2.19	37.75	53.9	16.1	231	155	VBW : 100 Hz
Hori.	7311.000	AV	32.40	36.61	-33.86	-	2.19	37.34	53.9	16.5	150	0	VBW : 100 Hz floor noise
Hori.	9748.000	AV	31.41	37.93	-31.34	-	2.19	40.19	53.9	**13.7**	131	170	VBW : 100 Hz
Vert.	4874.000	PK	49.27	32.30	-35.40	-	2.19	48.36	73.9	25.5	186	205	-
Vert.	7311.000	PK	46.42	36.61	-33.86	-	2.19	51.36	73.9	22.5	150	0	Floor Noise
Vert.	9748.000	PK	45.75	37.93	-31.34	-	2.19	54.53	73.9	19.3	145	196	-
Vert.	4874.000	AV	38.60	32.30	-35.40	-	2.19	37.69	53.9	16.2	186	205	VBW : 100 Hz
Vert.	7311.000	AV	32.43	36.61	-33.86	-	2.19	37.37	53.9	16.5	150	0	VBW : 100 Hz floor noise
Vert.	9748.000	AV	31.37	37.93	-31.34	-	2.19	40.15	53.9	**13.7**	145	196	VBW : 100 Hz

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz) - Gain(Amp) (1 GHz to 18 GHz)) - Gain(Amp) (only below 1 GHz & above 18 GHz) + Distance Fac.

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).

Distance Fac. : 1 GHz to 10 GHz : 20log (3.86 [m] / 3.0 [m]) = 2.19 [dB]

10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

Radiated Spurious Emission

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	WAC1	WAC1	WAC1
Date	January 21, 2025	January 25, 2025	January 26, 2025
Temperature / Humidity	21 deg. C / 41 % RH	20 deg. C / 33 % RH	22 deg. C / 33 % RH
Engineer	Miku Ikudome	Masahide Ozaki	Takayuki Kobayashi
	(1 GHz to 10 GHz)	(10 GHz to 18 GHz)	(18 GHz to 26.5 GHz)
Mode	Tx 11b 2462 MHz		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Fac. [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2483.500	PK	47.64	27.96	-27.94	-	2.19	49.85	73.9	24.0	288	195	-
Hori.	4924.000	PK	48.94	32.55	-35.46	-	2.19	48.22	73.9	25.6	264	186	-
Hori.	7386.000	PK	46.73	36.71	-33.74	-	2.19	51.89	73.9	22.0	150	0	Floor Noise
Hori.	9848.000	PK	45.72	37.92	-31.24	-	2.19	54.59	73.9	19.3	253	274	-
Hori.	2483.500	AV	32.85	27.96	-27.94	-	2.19	35.06	53.9	18.8	288	195	VBW : 100 Hz
Hori.	4924.000	AV	36.24	32.55	-35.46	-	2.19	35.52	53.9	18.3	264	186	VBW : 100 Hz
Hori.	7386.000	AV	32.07	36.71	-33.74	-	2.19	37.23	53.9	16.6	150	0	VBW : 100 Hz floor noise
Hori.	9848.000	AV	31.76	37.92	-31.24	-	2.19	40.63	53.9	**13.2**	253	274	VBW : 100 Hz
Vert.	2483.500	PK	47.57	27.96	-27.94	-	2.19	49.78	73.9	24.1	152	83	-
Vert.	4924.000	PK	48.79	32.55	-35.46	-	2.19	48.07	73.9	25.8	386	135	-
Vert.	7386.000	PK	46.86	36.71	-33.74	-	2.19	52.02	73.9	21.8	150	0	Floor Noise
Vert.	9848.000	PK	45.68	37.92	-31.24	-	2.19	54.55	73.9	19.3	288	156	-
Vert.	2483.500	AV	32.80	27.96	-27.94	-	2.19	35.01	53.9	18.8	152	83	VBW : 100 Hz
Vert.	4924.000	AV	36.08	32.55	-35.46	-	2.19	35.36	53.9	18.5	386	135	VBW : 100 Hz
Vert.	7386.000	AV	32.05	36.71	-33.74	-	2.19	37.21	53.9	16.6	150	0	VBW : 100 Hz floor noise
Vert.	9848.000	AV	31.71	37.92	-31.24	-	2.19	40.58	53.9	13.3	288	156	VBW : 100 Hz

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz) - Gain(Amp) (1 GHz to 18 GHz)) - Gain(Amp) (only below 1 GHz & above 18 GHz) + Distance Fac.

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).

Distance Fac. : 1 GHz to 10 GHz : 20log (3.86 [m] / 3.0 [m]) = 2.19 [dB]

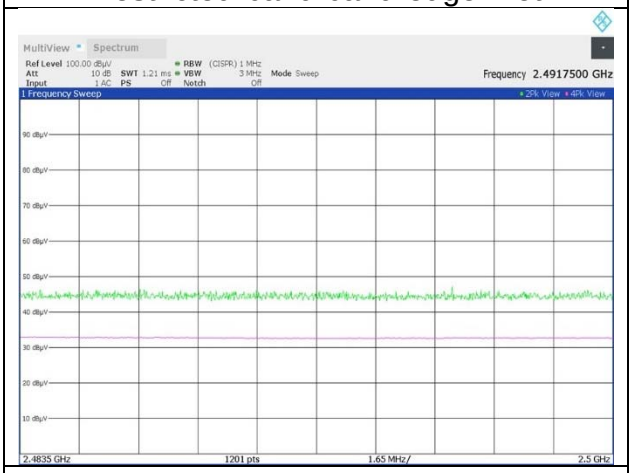
10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	WAC1
Date	January 21, 2025
Temperature / Humidity	21 deg. C / 41 % RH
Engineer	Miku Ikudome
Mode	Tx 11b 2462 MHz

Horizontal

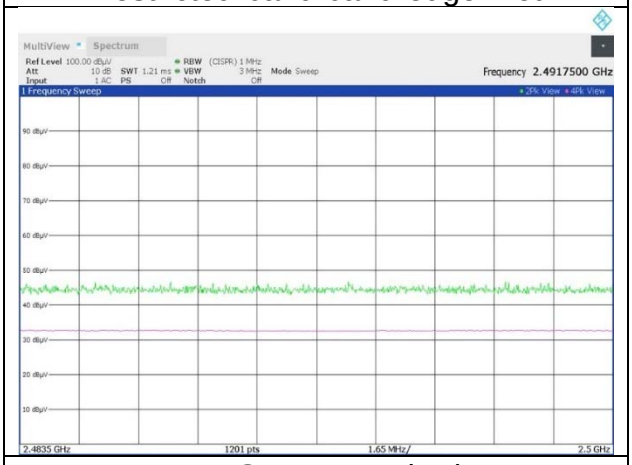
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	WAC1
Date	January 21, 2025
Temperature / Humidity	21 deg. C / 41 % RH
Engineer	Miku Ikudome
	(1 GHz to 2.8 GHz)
Mode	Tx 11g 2412 MHz

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Fac. [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2390.000	PK	47.57	27.85	-28.00	-	2.19	49.61	73.9	24.2	198	193	-
Hori.	2390.000	AV	35.13	27.85	-28.00	-	2.19	37.17	53.9	16.7	198	193	VBW : 5 kHz
Vert.	2390.000	PK	47.14	27.85	-28.00	-	2.19	49.18	73.9	24.7	134	171	-
Vert.	2390.000	AV	35.09	27.85	-28.00	-	2.19	37.13	53.9	16.7	134	171	VBW : 5 kHz

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz) - Gain(Amp) (1 GHz to 18 GHz)) - Gain(Amp) (only below 1 GHz & above 18 GHz) + Distance Fac.
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
Distance Fac. : 1 GHz to 10 GHz : 20log (3.86 [m] / 3.0 [m]) = 2.19 [dB]
10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

20 dBc Data Sheet

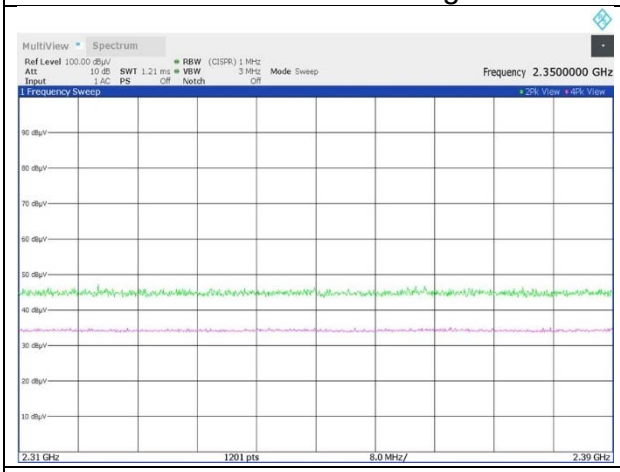
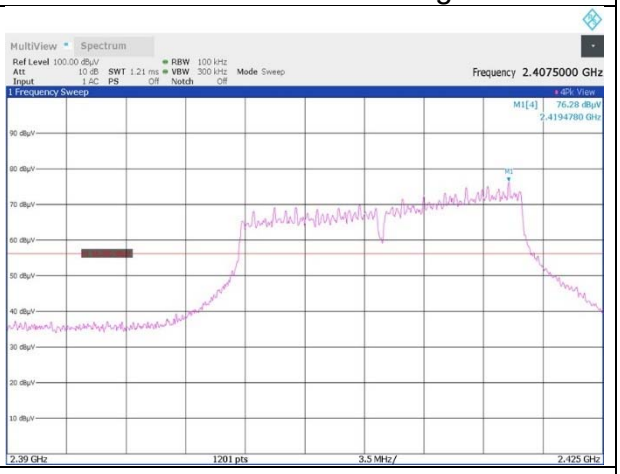
(RBW 100 kHz, VBW 300 kHz)

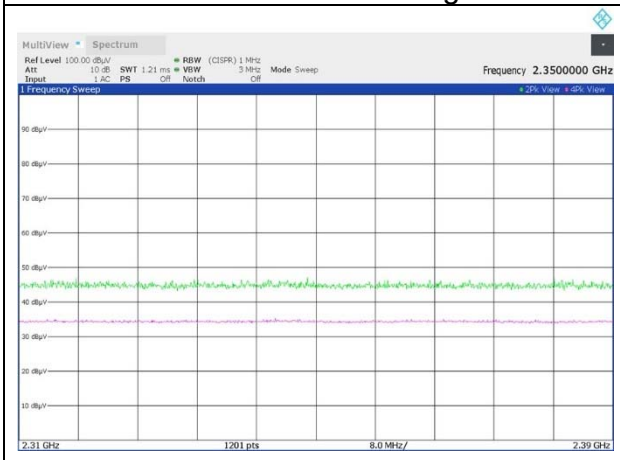
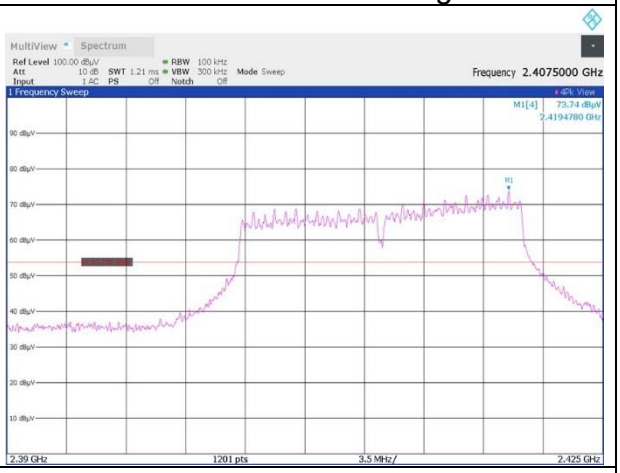
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Fac. [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	76.28	27.89	-27.99	-	2.19	78.37	-	-	Carrier
Hori.	2400.000	PK	40.90	27.89	-27.99	-	2.19	42.99	58.3	15.3	-
Vert.	2412.000	PK	73.74	27.89	-27.99	-	2.19	75.83	-	-	Carrier
Vert.	2400.000	PK	40.45	27.89	-27.99	-	2.19	42.54	55.8	**13.2**	-

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz) - Gain(Amp) (1 GHz to 18 GHz)) - Gain(Amp) (only below 1 GHz & above 18 GHz) + Distance Fac.
Distance Fac. : 1 GHz to 10 GHz : 20log (3.86 [m] / 3.0 [m]) = 2.19 [dB]
10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	WAC1
Date	January 21, 2025
Temperature / Humidity	21 deg. C / 41 % RH
Engineer	Miku Ikudome
Mode	Tx 11g 2412 MHz

Horizontal	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

Vertical	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge and authorized band edge were shown in tabular data.

Radiated Spurious Emission

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	WAC1
Date	January 21, 2025
Temperature / Humidity	21 deg. C / 41 % RH
Engineer	Miku Ikudome
	(1 GHz to 2.8 GHz)
Mode	Tx 11g 2462 MHz

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Fac. [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2483.500	PK	48.10	27.96	-27.94	-	2.19	50.31	73.9	23.5	286	193	-
Hori.	2483.500	AV	35.66	27.96	-27.94	-	2.19	37.87	53.9	**16.0**	286	193	VBW : 5 kHz
Vert.	2483.500	PK	47.36	27.96	-27.94	-	2.19	49.57	73.9	24.3	189	86	-
Vert.	2483.500	AV	35.12	27.96	-27.94	-	2.19	37.33	53.9	16.5	189	86	VBW : 5 kHz

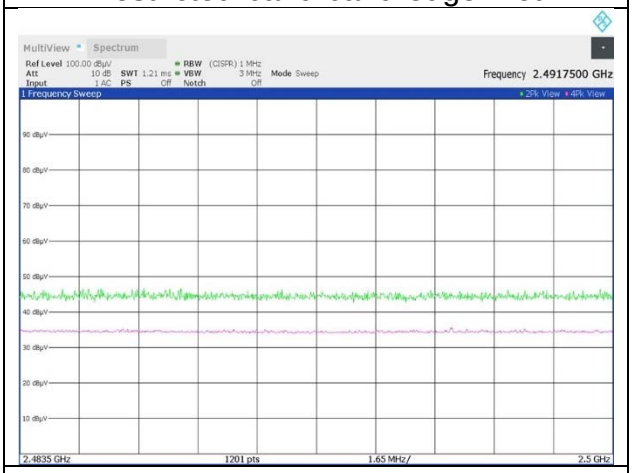
Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz) - Gain(Amp) (1 GHz to 18 GHz)) - Gain(Amp) (only below 1 GHz & above 18 GHz) + Distance Fac.
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
Distance Fac. : 1 GHz to 10 GHz : 20log (3.86 [m] / 3.0 [m]) = 2.19 [dB]
10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	WAC1
Date	January 21, 2025
Temperature / Humidity	21 deg. C / 41 % RH
Engineer	Miku Ikudome
Mode	Tx 11g 2462 MHz

Horizontal

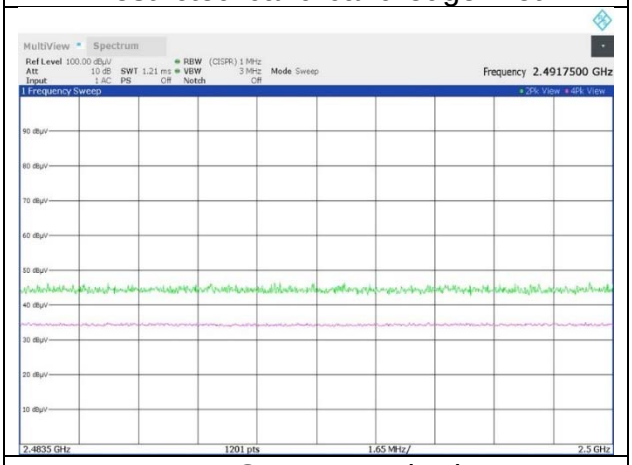
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	WAC1	WAC1	WAC1
Date	January 22, 2025	January 25, 2025	January 26, 2025
Temperature / Humidity	22 deg. C / 37 % RH	20 deg. C / 33 % RH	22 deg. C / 33 % RH
Engineer	Hiromasa Sato	Masahide Ozaki	Takayuki Kobayashi
	(1 GHz to 10 GHz)	(10 GHz to 18 GHz)	(18 GHz to 26.5 GHz)
Mode	Tx 11n-20 2412 MHz		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Fac. [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2390.000	PK	47.62	27.85	-28.00	-	2.19	49.66	73.9	24.2	223	192	-
Hori.	4824.000	PK	47.55	32.07	-35.34	-	2.19	46.47	73.9	27.4	208	183	-
Hori.	7236.000	PK	46.21	36.38	-33.97	-	2.19	50.81	73.9	23.0	150	0	Floor Noise
Hori.	9648.000	PK	45.88	37.93	-31.43	-	2.19	54.57	73.9	19.3	150	0	Floor Noise
Hori.	2390.000	AV	34.96	27.85	-28.00	-	2.19	37.00	53.9	16.9	223	192	VBW : 5 kHz
Hori.	4824.000	AV	36.53	32.07	-35.34	-	2.19	35.45	53.9	18.4	208	183	VBW : 5 kHz
Hori.	7236.000	AV	34.16	36.38	-33.97	-	2.19	38.76	53.9	15.1	150	0	VBW : 5 kHz, Floor Noise
Hori.	9648.000	AV	33.75	37.93	-31.43	-	2.19	42.44	53.9	**11.4**	150	0	VBW : 5 kHz, Floor Noise
Vert.	2390.000	PK	46.73	27.85	-28.00	-	2.19	48.77	73.9	25.1	134	343	-
Vert.	4824.000	PK	47.14	32.07	-35.34	-	2.19	46.06	73.9	27.8	184	147	-
Vert.	7236.000	PK	46.63	36.38	-33.97	-	2.19	51.23	73.9	22.6	150	0	Floor Noise
Vert.	9648.000	PK	45.86	37.93	-31.43	-	2.19	54.55	73.9	19.3	150	0	Floor Noise
Vert.	2390.000	AV	34.95	27.85	-28.00	-	2.19	36.99	53.9	16.9	134	343	VBW : 5 kHz
Vert.	4824.000	AV	36.41	32.07	-35.34	-	2.19	35.33	53.9	18.5	184	147	VBW : 5 kHz
Vert.	7236.000	AV	34.38	36.38	-33.97	-	2.19	38.98	53.9	14.9	150	0	VBW : 5 kHz, Floor Noise
Vert.	9648.000	AV	33.69	37.93	-31.43	-	2.19	42.38	53.9	11.5	150	0	VBW : 5 kHz, Floor Noise

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz) - Gain(Amp) (1 GHz to 18 GHz)) - Gain(Amp) (only below 1 GHz & above 18 GHz) + Distance Fac.
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
Distance Fac. : 1 GHz to 10 GHz : 20log (3.86 [m] / 3.0 [m]) = 2.19 [dB]
10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

20 dBc Data Sheet

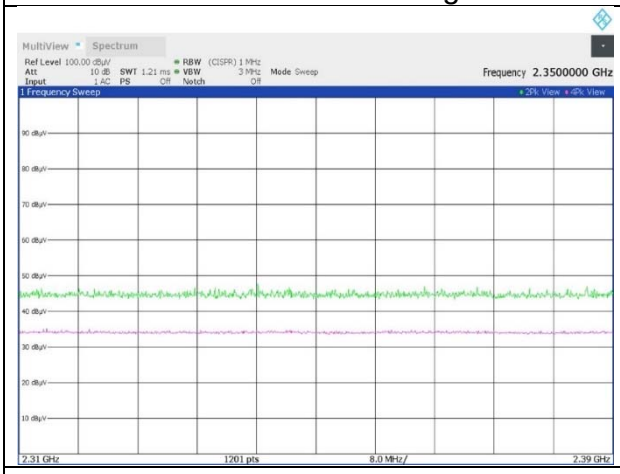
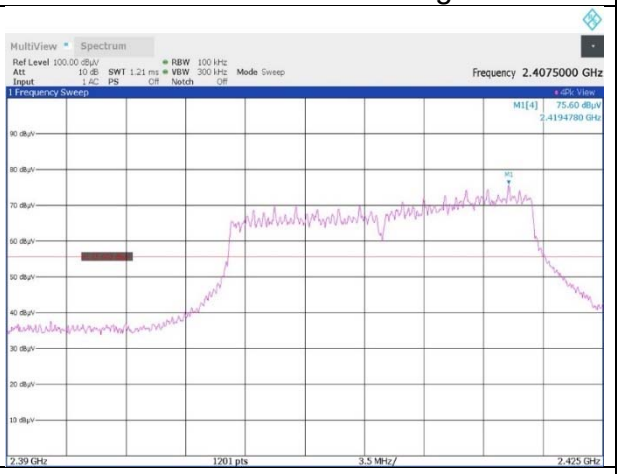
(RBW 100 kHz, VBW 300 kHz)

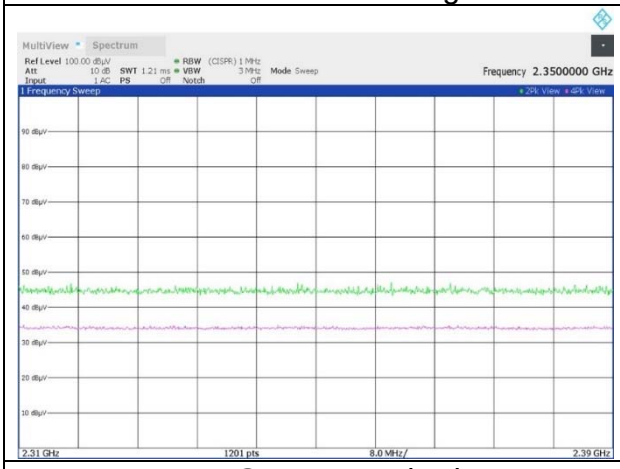
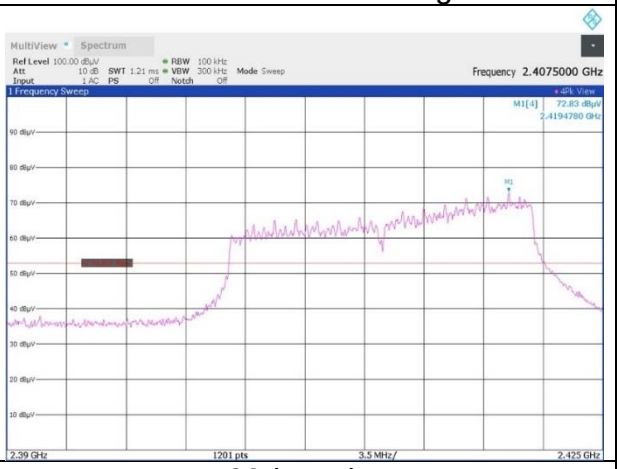
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Fac. [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	75.60	27.89	-27.99	-	2.19	77.69	-	-	Carrier
Hori.	2400.000	PK	39.94	27.89	-27.99	-	2.19	42.03	57.6	15.5	-
Vert.	2412.000	PK	72.83	27.89	-27.99	-	2.19	74.92	-	-	Carrier
Vert.	2400.000	PK	37.97	27.89	-27.99	-	2.19	40.06	54.9	14.8	-

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz) - Gain(Amp) (1 GHz to 18 GHz)) - Gain(Amp) (only below 1 GHz & above 18 GHz) + Distance Fac.
Distance Fac. : 1 GHz to 10 GHz : 20log (3.86 [m] / 3.0 [m]) = 2.19 [dB]
10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	WAC1
Date	January 22, 2025
Temperature / Humidity	22 deg. C / 37 % RH
Engineer	Hiromasa Sato
Mode	Tx 11n-20 2412 MHz

Horizontal	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

Vertical	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge and authorized band edge were shown in tabular data.

Radiated Spurious Emission

Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	WAC1	WAC1	WAC1	WAC1
Date	January 30, 2025	January 22, 2025	January 25, 2025	January 26, 2025
Temperature / Humidity	20 deg. C / 25 % RH	22 deg. C / 37 % RH	20 deg. C / 33 % RH	22 deg. C / 33 % RH
Engineer	Takayuki Kobayashi (30 MHz to 1 GHz)	Hiromasa Sato (1 GHz to 10 GHz)	Masahide Ozaki (10 GHz to 18 GHz)	Takayuki Kobayashi (18 GHz to 26.5 GHz)
Mode	Tx 11n-20 2437 MHz			

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Fac. [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	215.507	QP	40.40	11.07	7.23	27.95	0.00	30.75	43.5	12.7	156	289	-
Hori.	294.912	QP	42.30	13.59	7.48	27.76	0.00	35.61	46.0	10.3	164	115	-
Hori.	359.081	QP	42.50	15.04	7.68	28.09	0.00	37.13	46.0	8.8	113	79	-
Hori.	393.215	QP	44.00	15.52	7.77	28.37	0.00	38.92	46.0	7.0	102	219	-
Hori.	400.005	QP	41.00	15.74	7.80	28.42	0.00	36.12	46.0	9.8	100	64	-
Hori.	442.368	QP	43.70	16.31	7.91	28.65	0.00	39.27	46.0	**6.7**	100	267	-
Hori.	933.006	QP	33.80	21.87	8.89	28.14	0.00	36.42	46.0	9.5	100	203	-
Hori.	4874.000	PK	48.75	32.30	-35.40	-	2.19	47.84	73.9	26.0	341	175	-
Hori.	7311.000	PK	46.58	36.61	-33.86	-	2.19	51.52	73.9	22.3	150	0	Floor Noise
Hori.	9748.000	PK	45.57	37.93	-31.34	-	2.19	54.35	73.9	19.5	150	0	Floor Noise
Hori.	4874.000	AV	40.55	32.30	-35.40	-	2.19	39.64	53.9	14.2	341	175	VBW : 5 kHz
Hori.	7311.000	AV	34.61	36.61	-33.86	-	2.19	39.55	53.9	14.3	150	0	VBW : 5 kHz, Floor Noise
Hori.	9748.000	AV	33.53	37.93	-31.34	-	2.19	42.31	53.9	11.5	150	0	VBW : 5 kHz, Floor Noise
Vert.	30.584	QP	33.60	13.57	6.19	28.67	0.00	24.69	40.0	15.3	100	55	-
Vert.	358.729	QP	38.00	15.04	7.67	28.09	0.00	32.62	46.0	13.3	149	156	-
Vert.	393.216	QP	40.20	15.52	7.77	28.37	0.00	35.12	46.0	10.8	130	189	-
Vert.	442.368	QP	38.80	16.31	7.91	28.65	0.00	34.37	46.0	11.6	149	41	-
Vert.	839.999	QP	31.90	21.22	8.78	28.42	0.00	33.48	46.0	12.5	100	318	-
Vert.	867.873	QP	29.40	21.99	8.81	28.34	0.00	31.86	46.0	14.1	100	313	-
Vert.	4874.000	PK	47.69	32.30	-35.40	-	2.19	46.78	73.9	27.1	155	176	-
Vert.	7311.000	PK	46.79	36.61	-33.86	-	2.19	51.73	73.9	22.1	150	0	Floor Noise
Vert.	9748.000	PK	45.47	37.93	-31.34	-	2.19	54.25	73.9	19.6	150	0	Floor Noise
Vert.	4874.000	AV	39.01	32.30	-35.40	-	2.19	38.10	53.9	15.8	155	176	VBW : 5 kHz
Vert.	7311.000	AV	34.32	36.61	-33.86	-	2.19	39.26	53.9	14.6	150	0	VBW : 5 kHz, Floor Noise
Vert.	9748.000	AV	33.31	37.93	-31.34	-	2.19	42.09	53.9	11.8	150	0	VBW : 5 kHz, Floor Noise

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz) - Gain(Amp) (1 GHz to 18 GHz)) - Gain(Amp) (only below 1 GHz & above 18 GHz) + Distance Fac.

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).

Distance Fac. : 1 GHz to 10 GHz : 20log (3.86 [m] / 3.0 [m]) = 2.19 [dB]

10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

Radiated Spurious Emission

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	WAC1	WAC1	WAC1
Date	January 22, 2025	January 25, 2025	January 26, 2025
Temperature / Humidity	22 deg. C / 37 % RH	20 deg. C / 33 % RH	22 deg. C / 33 % RH
Engineer	Hiromasa Sato	Masahide Ozaki	Takayuki Kobayashi
	(1 GHz to 10 GHz)	(10 GHz to 18 GHz)	(18 GHz to 26.5 GHz)
Mode	Tx 11n-20 2462 MHz		

(* PK: Peak, AV: Average, QP: Quasi-Peak)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Fac. [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2483.500	PK	47.22	27.96	-27.94	-	2.19	49.43	73.9	24.4	206	193	-
Hori.	4924.000	PK	48.18	32.55	-35.46	-	2.19	47.46	73.9	26.4	198	184	-
Hori.	7386.000	PK	46.77	36.71	-33.74	-	2.19	51.93	73.9	21.9	150	0	Floor Noise
Hori.	9848.000	PK	45.82	37.92	-31.24	-	2.19	54.69	73.9	19.2	150	0	Floor Noise
Hori.	2483.500	AV	35.56	27.96	-27.94	-	2.19	37.77	53.9	16.1	206	193	-
Hori.	4924.000	AV	39.35	32.55	-35.46	-	2.19	38.63	53.9	15.2	198	184	VBW : 5 kHz
Hori.	7386.000	AV	34.10	36.71	-33.74	-	2.19	39.26	53.9	14.6	150	0	VBW : 5 kHz, Floor Noise
Hori.	9848.000	AV	33.65	37.92	-31.24	-	2.19	42.52	53.9	11.3	150	0	VBW : 5 kHz, Floor Noise
Vert.	2483.500	PK	47.09	27.96	-27.94	-	2.19	49.30	73.9	24.6	207	65	-
Vert.	4924.000	PK	47.53	32.55	-35.46	-	2.19	46.81	73.9	27.0	176	175	-
Vert.	7386.000	PK	46.81	36.71	-33.74	-	2.19	51.97	73.9	21.9	150	0	Floor Noise
Vert.	9848.000	PK	46.13	37.92	-31.24	-	2.19	55.00	73.9	18.9	150	0	Floor Noise
Vert.	2483.500	AV	35.42	27.96	-27.94	-	2.19	37.63	53.9	16.2	207	65	VBW : 5 kHz
Vert.	4924.000	AV	38.75	32.55	-35.46	-	2.19	38.03	53.9	15.8	176	175	VBW : 5 kHz
Vert.	7386.000	AV	34.12	36.71	-33.74	-	2.19	39.28	53.9	14.6	150	0	VBW : 5 kHz, Floor Noise
Vert.	9848.000	AV	33.83	37.92	-31.24	-	2.19	42.70	53.9	**11.2**	150	0	VBW : 5 kHz, Floor Noise

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz) - Gain(Amp) (1 GHz to 18 GHz)) - Gain(Amp) (only below 1 GHz & above 18 GHz) + Distance Fac.

*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).

Distance Fac. : 1 GHz to 10 GHz : 20log (3.86 [m] / 3.0 [m]) = 2.19 [dB]

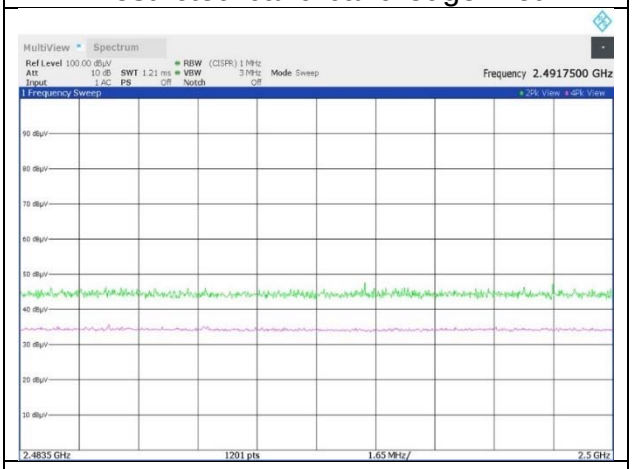
10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	WAC1
Date	January 22, 2025
Temperature / Humidity	22 deg. C / 37 % RH
Engineer	Hiromasa Sato
Mode	Tx 11n-20 2462 MHz

Horizontal

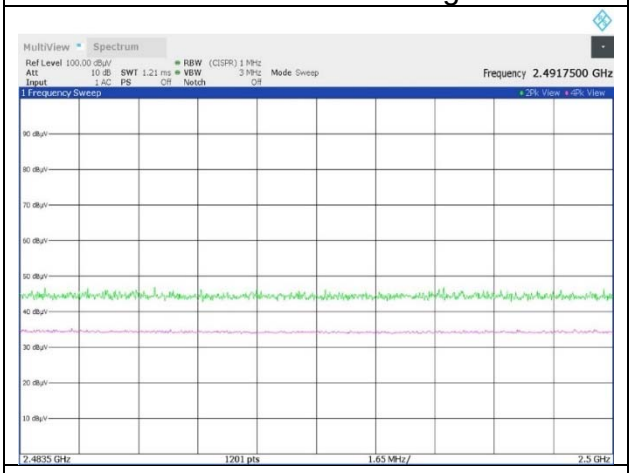
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot

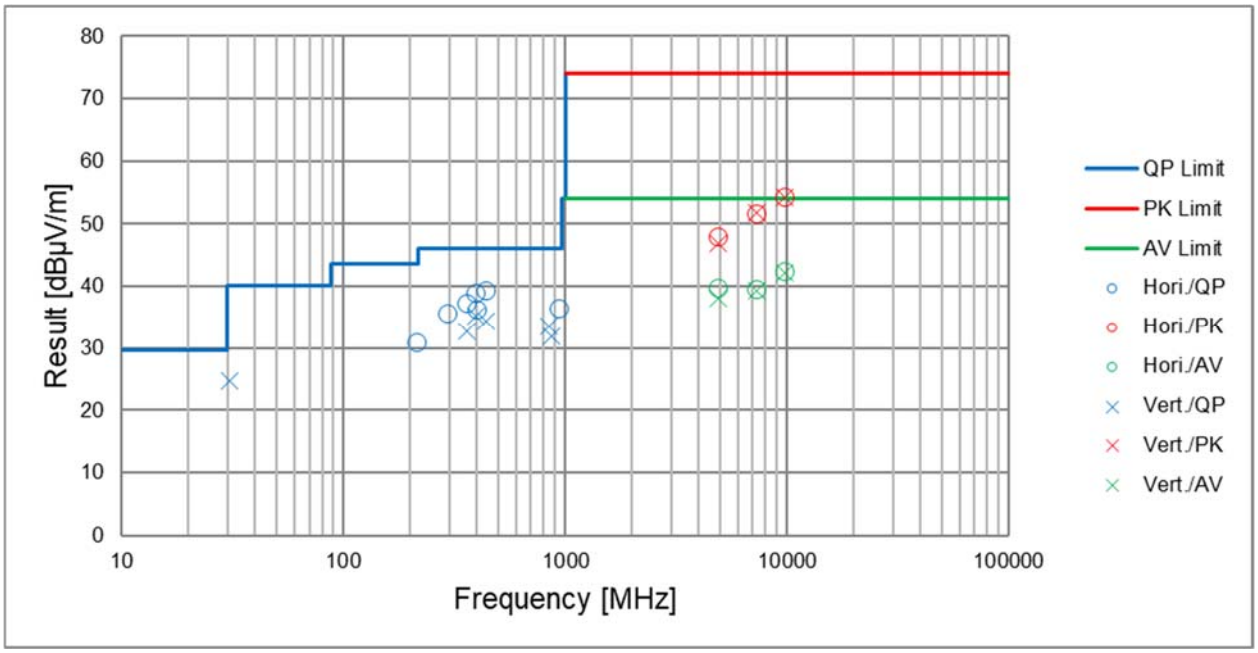


Trace Green : Peak Plot
Trace Purple : Average Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(Plot data, Worst case mode for Maximum Peak Output Power)

Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	WAC1	WAC1	WAC1	WAC1
Date	January 30, 2025	January 22, 2025	January 25, 2025	January 26, 2025
Temperature / Humidity	20 deg. C / 25 % RH	22 deg. C / 37 % RH	20 deg. C / 33 % RH	22 deg. C / 33 % RH
Engineer	Takayuki Kobayashi (30 MHz to 1 GHz)	Hiromasa Sato (1 GHz to 10 GHz)	Masahide Ozaki (10 GHz to 18 GHz)	Takayuki Kobayashi (18 GHz to 26.5 GHz)
Mode	Tx 11n-20 2437 MHz			

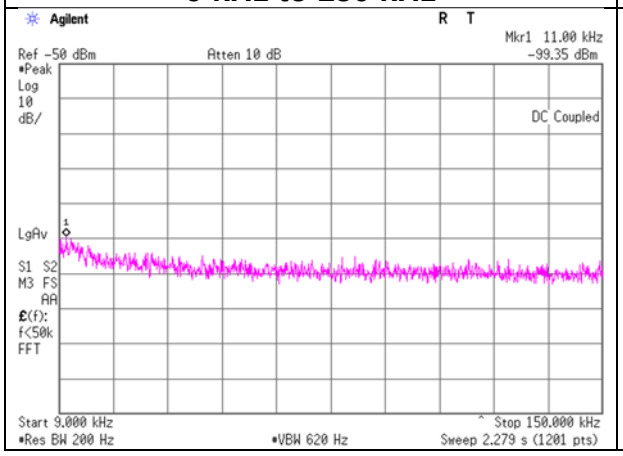


*These plots data contain sufficient number to show the trend of characteristic features for EUT.

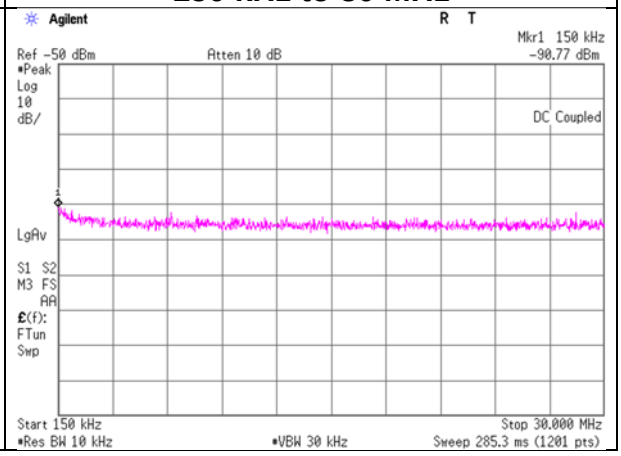
Conducted Spurious Emission

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	January 20, 2025
Temperature / Humidity	22 deg. C / 31 % RH
Engineer	Shiro Kobayashi
Mode	Tx 11n-20 2437 MHz

9 kHz to 150 kHz



150 kHz to 30 MHz



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain * [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
11.00	-99.35	1.01	9.54	2.0	1.0	-86.8	300	6.0	-25.5	46.7	72.2	-
150.00	-90.77	1.01	9.54	2.0	1.0	-78.2	300	6.0	-17.0	24.0	41.0	-

E [dBuV/m] = EIRP [dBm] - 20 log (Distance [m]) + Ground bounce [dB] + 104.8 [dBuV/m]

EIRP[dBm] = Reading [dBm] + Cable loss [dB] + Attenuator Loss [dB] + Antenna gain [dBi] + 10 * log (N)

N: Number of output

*2.0 dBi was applied to the test result based on ANSI C63.10 since antenna gain was less than 2.0 dBi.

Power Density

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	January 20, 2025
Temperature / Humidity	22 deg. C / 31 % RH
Engineer	Shiro Kobayashi
Mode	Tx

11b

Frequency [MHz]	Measured Frequency [MHz]	Reading [dBm/3 kHz]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm/3 kHz]	Limit [dBm/3 kHz]	Margin [dB]
2412	2412.986	-10.43	2.25	9.64	1.46	8.00	6.54
2437	2435.983	-7.24	2.26	9.64	4.66	8.00	3.34
2462	2462.986	-11.01	2.27	9.64	0.90	8.00	7.10

11g

Frequency [MHz]	Measured Frequency [MHz]	Reading [dBm/3 kHz]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm/3 kHz]	Limit [dBm/3 kHz]	Margin [dB]
2412	2419.171	-32.18	2.25	9.64	-20.29	8.00	28.29
2437	2429.436	-30.55	2.26	9.64	-18.65	8.00	26.65
2462	2469.461	-33.13	2.27	9.64	-21.22	8.00	29.22

11n-20

Frequency [MHz]	Measured Frequency [MHz]	Reading [dBm/3 kHz]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm/3 kHz]	Limit [dBm/3 kHz]	Margin [dB]
2412	2417.652	-30.30	2.25	9.64	-18.41	8.00	26.41
2437	2431.990	-29.63	2.26	9.64	-17.73	8.00	25.73
2462	2467.652	-31.33	2.27	9.64	-19.42	8.00	27.42

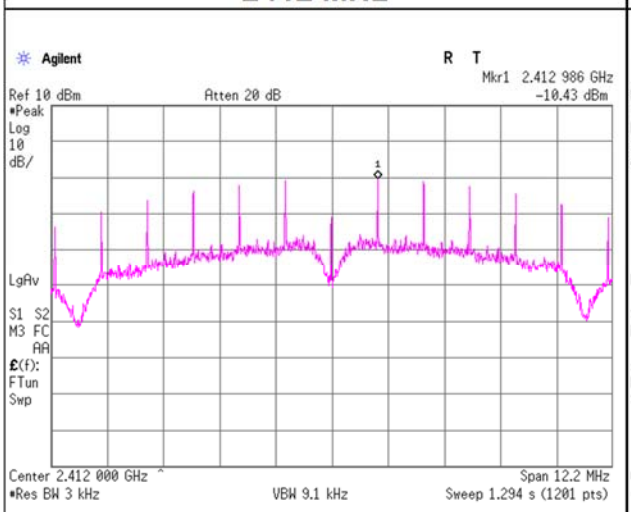
Sample Calculation:

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

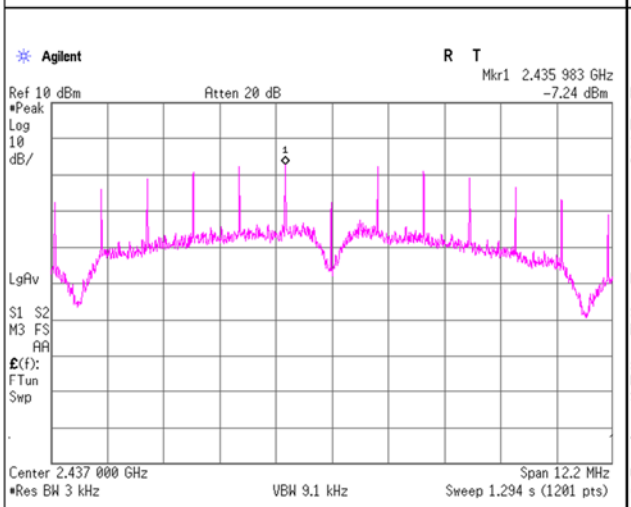
Power Density

11b

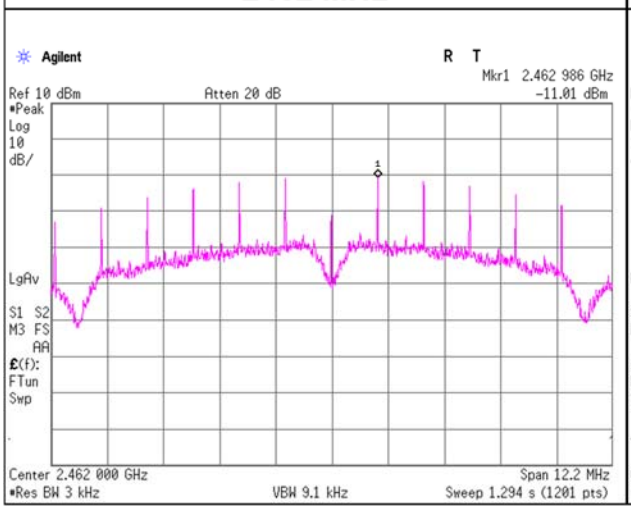
2412 MHz



2437 MHz

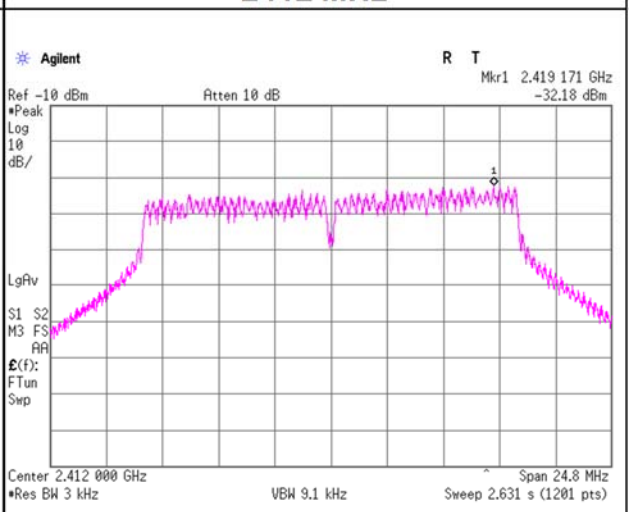


2462 MHz

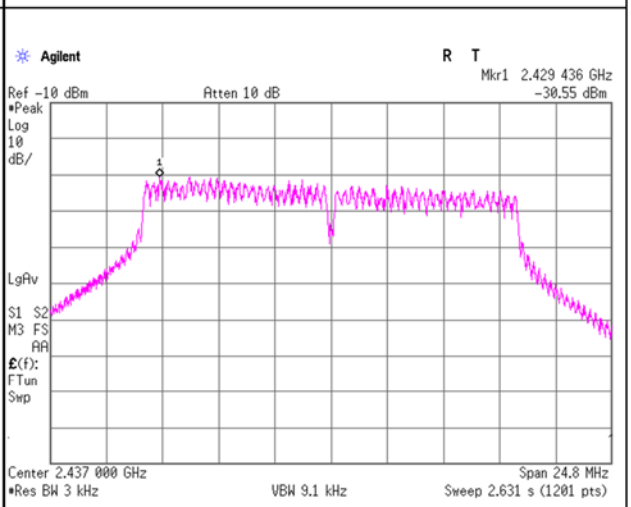


11g

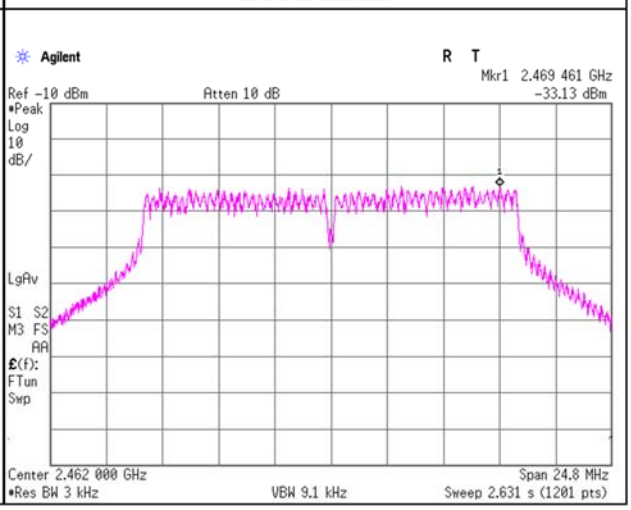
2412 MHz



2437 MHz



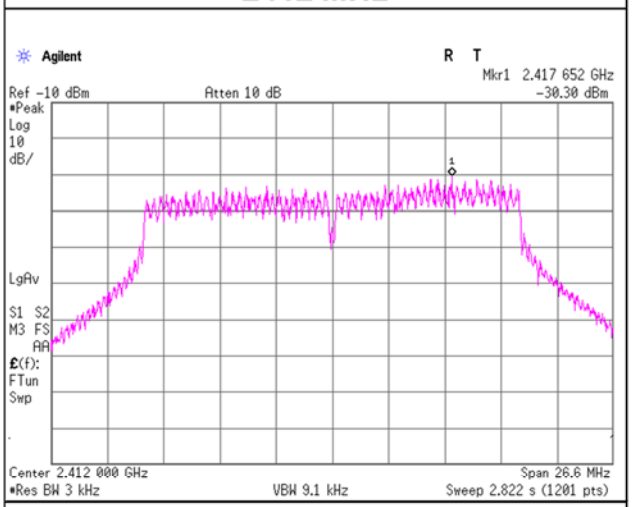
2462 MHz



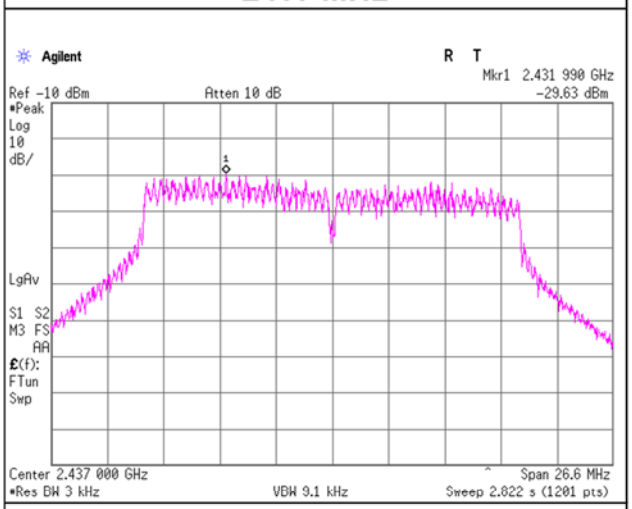
Power Density

11n-20

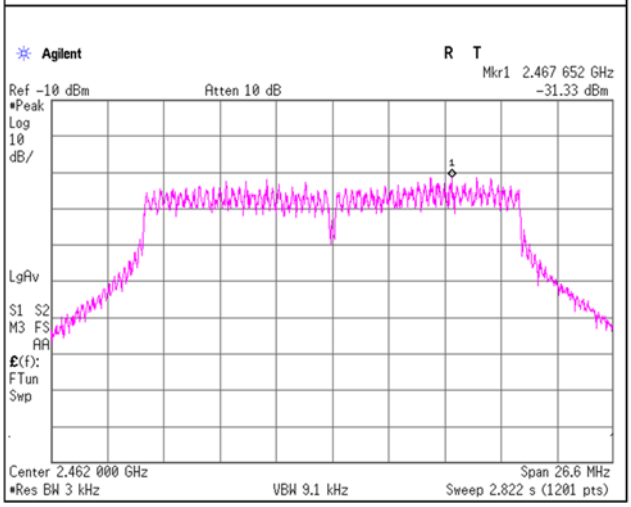
2412 MHz



2437 MHz



2462 MHz



APPENDIX 2: Test Instruments

Test Equipment (1/2)

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
AT	145132	Attenuator	Weinschel Corp.	54A-10	W5692	2024/10/10	12
AT	242068	Attenuator	Weinschel Corp.	54A-10	120524	2024/11/06	12
AT	196947	Coaxial Cable	Huber+Suhner	SUCOFLEX 102	803478/2	2024/03/07	12
AT	196949	Coaxial Cable	Huber+Suhner	SUCOFLEX 102	803480/2	2024/03/07	12
AT	146212	Digital Hitester	HIOKI E.E. CORPORATION	3805-50	80997828	2024/09/24	12
AT	146247	Power Meter	Keysight Technologies Inc	8990B	MY51000272	2024/05/14	12
AT	146310	Power sensor	Keysight Technologies Inc	N1923A	MY5326009	2024/05/14	12
AT	235604	Spectrum Analyzer	Keysight Technologies Inc	E4440A	MY45300743	2024/05/23	12
AT	204923	Terminator	Weinschel - API Technologies Corp	M1459A	110101	2024/02/14	12
AT	175822	Thermo-Hygrometer	CUSTOM. Inc	CTH-201	-	2024/08/11	12
RE	199784	Attenuator	JFW	50HF-006N	-	2024/06/14	12
RE	239786	Biconical Antenna	Schwarzbeck Mess-Elektronik OHG	VHBB 9124+BBA9106	01895	2024/08/10	12
RE	236708	Coaxial Cable	Hayashi-Repic co., Ltd.	NMS079B-GL310C-SMS117B-2m	47256-02-03	2024/05/09	12
RE	236710	Coaxial Cable	Hayashi-Repic co., Ltd.	KMS020B-GL140sE-KMS020B-7.0m	47256-03-01	2024/05/09	12
RE	236723	Coaxial Cable	Hayashi-Repic co., Ltd.	SF106(HUBER+SUHNER)/LMR400UF/GL310C/GL310C	2000429/47753-1/47256-01-03/47256-01-01	2024/05/09	12
RE	239643	Coaxial Cable	Junkosha	MWX221-01000NFSNMS/B	2306S021	2024/08/20	12
RE	243209	Coaxial Cable	Hayashi-Repic co., Ltd.	SMS13-13A26-NFS13-1.0m	49190-01-01	2024/12/05	12
RE	243687	Coaxial Cable	Hayashi-Repic co., Ltd.	NMS079B-GL310C-NMS079B-6.0m	49373-01-01	2024/12/05	12
RE	243689	Coaxial Cable	Huber+Suhner	GL310C(Hayashi-Repic)/SF106/SF106	49373-01-01/2000781/2001160	2024/12/17	12
RE	235639	DIGITAL MULTIMETER	HIOKI E.E. CORPORATION	DT4261	230313156	2024/05/29	12
RE	170932	EMI Software	TSJ (Techno Science Japan)	TEPTO-DV3(RE,CE,ME,PE)	Ver 3.1.0546	-	-
RE	145512	Horn Antenna	ETS-Lindgren	3160-09	00094868	2024/06/20	12
RE	236686	Horn Antenna	Schwarzbeck Mess-Elektronik OHG	BBHA 9120 C	787	2024/04/19	12

Test Equipment (2/2)

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
RE	236769	Horn Antenna	AINFO Inc.	LB-8180-NF	2030013000111	2024/04/19	12
RE	145527	Logperiodic Antenna	Schwarzbeck Mess-Elektronik OHG	VUSLP9111B	193	2024/04/10	12
RE	145130	Pre Amplifier	Agilent Technologies	8447D	2944A09965	2024/07/10	12
RE	145007	Pre Amplifier	Toyo Corporation	HAP18-26W	19	2024/08/21	12
RE	237784	RF RELAY MATRIX with preamplifier	TSJ (Techno Science Japan)	RFM-E221261R	07795	2024/11/12	12
RE	236212	Semi-Anechoic Chamber	TDK	SWAC-01(NSA)	1	2024/05/09	12
RE	236616	Semi-Anechoic Chamber	TDK	SWAC-01(SVSWR)	1	2024/06/04	12
RE	207280	Tape Measure	ASKUL	-	-	-	-
RE	235267	Test Receiver	Rohde & Schwarz	ESW44	103018	2024/03/05	12
RE	235735	Thermo-Hygrometer	CUSTOM. Inc	CTH-230	-	2024/04/28	12

***Hyphens for Last Calibration Date and Cal Int (month) are instruments that Calibration is not required (e.g. software), or instruments checked in advance before use.**

The expiration date of the calibration is the end of the expired month.
As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.

All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.

Test item:

AT: Antenna Terminal Conducted test
RE: Radiated Emission